



AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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PROPRIETORS. }

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, SEPTEMBER 10, 1836.

NORWICH AND WORCESTER RAILROAD. NOTICE TO CONTRACTORS.

SEALED PROPOSALS will be received at the Office of the Norwich and Worcester Railroad Company, in the city of Norwich, from the 25th Sept. to the 10th of October next, for the Grading and Masonry on 17 miles of the Road, from Jewett City to the Village of Danielsonville, in Killingly.

Plans and Profiles of the work may be examined at the Engineers Office in Norwich; or the Office of the Resident Engineer at Eaton's Hotel, in the town of Plainfield, after the 25th of September next.

Proposals will also be received for 600 feet of Bridging on Col. Long's Patent; on the First Division of said Road. The Masonry of the Bridges will be completed in the month of November.

No Ardent Spirits to be used on the work.

Contractors are requested to present along with their proposals the usual certificates of character and ability.

JAMES LAURIE, Engineer.

Engineer's Office, Norwich City, Conn., {
September 3d, 1836. } 36—3t

TO CONTRACTORS.

TWO hundred thousand yards of earth will be removed by contract on Staten Island. Persons desirous of making contracts will make immediate application. The work will be divided in 1000 feet sections, and let in part or main.

Apply at the office at Fort Tompkins, Staten Island, where the profiles can be seen and the ground examined.
W. JAY HASHITT,
36—3t* Chief Engineer.

Particular attention is called to the notice of the opening of the books of the New-York and Albany Railroad; and the extraordinary receipts on the Utica and Schenectady Railroad, pages 568 and 569 of this Journal.

NEWBURGH, OR HUDSON AND DELAWARE

RAILROAD.—We commence in this number, and shall complete in the next, the Report of JAMES B. SARGEANT, Esq., in relation to this important work.

On referring to the early numbers of the Journal it will be found that a notice of this work was amongst the very first given to the public.

The Report of 1831, by H. G. Sargeant, Esq., was published at length—from which it became evident that this would be found a highly favorable route for the termination of the New York and Erie Railroad.

On further examinations it has become still more certain, notwithstanding a track will terminate at Tappan, that Newburgh will be the outlet for a large portion of the produce of the west, as the distance to tide water, at Newburgh, from the junction of the two roads will be only about 25 miles, with an aggregate rise and fall of 538 feet, 430 feet of which is favorable to the heavy or descending trade, whilst on the other route the rise and fall is 1305 feet—and on examination it will be found that the distance to New York, via Newburgh, is only 33 miles greater than by Tappan.

These facts must, we think, satisfy every one that the natural route from the Shoungum Mountain, is by Railroad to Newburgh, and thence on the Hudson in Tow Boats, which serve also as store houses for grain and many other articles until they are sold and transferred to those vessels in which they are to leave the port.

A knowledge of these facts have recently given an impulse to speculations in Newburgh which have fairly amazed some of the worthy citizens, who cannot imagine how property can be worth more than the amount upon which it will pay 7 per cent. interest. The Report is unavoidably omitted in this number, but will appear in the next.

NEWBURGH.—How is it that the thousand and one eagle-eyed-speculators have so long overlooked the beauties of this place? With a beautiful bay of vast extent in its front and on its right and left—a mountain scenery unequalled for its boldness, variety and beauty; it has some of the most beautiful prospects ever beheld.

Who that has ever ranged along the more elevated streets north of the academy or strolled over that delightful eminence in the vicinity, and a little south of the mansion of S. Powell, Esq., or gazed from the still more elevated point called "Mount Prospect," and occupied by Isaac Vanduzer, Esq., has not been delighted and charmed by the beauties of the surrounding scenery and prospects? Who can say that they have beheld scenery more beautiful? Few—very few.

The attention of capitalists, as well as of those who desire beautiful residences, has we perceive been directed to Newburgh—and a sale of valuable lots is to take place on Tuesday next, the 13th, which will we are sure, attract the attention of many New-Yorkers.

We publish the following from the Times. This is truly an age of internal improvements. Whilst such estimates are presented, backed by actual receipts on the Utica and Schenectady Railroad, at the rate of two per cent. per month on all their disbursements, it will not be called a mania, the avidity with which such important stocks are sought after. We hear that it is the expectation, of this Company to declare a dividend of seven per cent. for the first six months, and that they will then have a handsome surplus, over and above the many extraordinary expenses, attendant on opening a new road. They now take from 600 to 1000 passengers per day, at \$3 each, and

so soon as they complete their open cars, to carry passengers at 1 to \$2 each, their receipts will be doubled, and we may add trebled, so soon as the direct line to the west, by Oswego is completed. The distance is within 70 miles. The capital, \$750,000,—which by an estimate of Judge Wright, will complete the road with one track—and grade it for two. The Oswego Railroad has the important privilege of carrying merchandize, which we have no doubt a liberal policy will extend to all the Railroads in the State.

"The Oswego Railroad certainly presents great inducements to invest capital for fifty years—the term of its charter. Should even half of the following statement be realized, and of its correctness we have been assured, from a respectable source. The main item, passengers, is corroborated by the returns of the Utica and Schenectady Railroad. The profits on this Railroad have been so great, thus far, that we are informed by a prominent director, that for the first six months, they will be enabled to divide seven per cent., paying all expenses, and still leaving a surplus fund. Their receipts since the opening of the road, up to this time, exceed the rate of two per cent. per month, on the entire disbursements by the company. On reference to the charter of the Oswego Company, we find it is for fifty years, and gives the privilege of carrying goods, and passengers, at 5 cents per mile—free of tolls in the winter, paying tolls "during such portions of the year, as the Erie and Oswego Canals shall be navigable," and not exceeding the rates of toll, upon the canals.

The completion of this road, as contemplated, in two years, is highly important to this city. It is singular that we have not earlier directed our attention, to this road and Ontario steamboats, to fill up promptly one of the lines to the "Far West."

ESTIMATE OF THE INCOME FROM THE OSWEGO AND UTICA RAILROAD.

From the Utica Observer.

There are now 100 passengers per day passing each way from the middle of April to the middle of December; eight months, 209 days, deducting Sundays, at 200 passengers, is \$41,800.

During the winter months, the travel may be estimated at 50 per day, each way, say 100 passengers for 100 days, 10,000

51,800 a \$3,155,400

The above estimate is not one-third of the passengers that now daily pass between Utica and Schenectady; it is but reasonable to calculate, that half of these passengers to vary the route, will go to the west one way and return the other. Another consideration presents itself in favor of the Oswego route; passengers taking the night boat from New York, will the next evening take the Oswego night boat for Lewiston, and, while sleeping with comfort, are the next morning at Lewiston, and can either breakfast in that place, the Falls or Buffalo, by a railroad now nearly completed. The amount of merchandize that will be carried on this road it is difficult to

state with any precision. The Comptroller's report of the last year states 60,000 tons, as the amount that passed during the season of navigation, to and from the Oswego canal to Syracuse; 1/10th of this amount, in all probability, would pass on the railroad to Utica; 6000 tons at \$3 50*

There are six mills containing 33 runs of stone, that during the time of suspended navigation, say 4 1/2 months, can readily grind an average, for 100 days of this time, 35 barrels per diem, to a run equal to 115,500 barrels; it is safe to calculate, that the half of this would find its way to Utica, at 25 cents per barrel, to be then forwarded by the Utica and Schenectady Railroad to the New England States, by their great Boston and Western Railroad, 57,750 barrels at 25 cents \$21,000

\$21,000

\$14,437

\$190,837

an amount equal to 25 per cent on the estimated cost of the road by B. Wright, Esq., civil engineer.

Should the contemplated law pass Congress the ensuing session, (favorably reported on by the late comptroller of the United States) to extend the drawback system to the transit of foreign goods through our country, under bonds, the amount of passengers and goods to Upper Canada, would be quadrupled. This trade of itself would pay a handsome interest on the cost of the entire railroad to Utica.

Water power abounds on either of the routes to saw up the fine timber with which the centre of Oswego county, and west part of Oneida is covered. The amount, therefore for lumber, in fact cord wood itself, cannot be calculated with any certainty, but may be safely taken into view, as affording an important item in the income of the railroad.

There are now two cotton mills in Oswego, calculated for 7800 spindles, and a number of manufactories of different kinds going up, that will require a daily trade and intercourse, to and from New-York, the extent of which, with the travel to and from the far west, it is impossible to foresee or predict. The calculations of the most sanguine have been more than realized by the results of the western travel and trade; to this must now be added, on this railroad, nearly the entire travel to the seaboard, from Upper Canada, on the completion of her railroads centering at Toronto; and other points, on Lake Ontario, daily brought in connection with each other, by means of the splendid steamboats, passing and repassing on this inland Mediterranean.

One of these roads at least will shorten the distance between Utica and the centre of Lake Huron, 600 miles, over the Lake Erie route.

ILLINOIS.—The following article from the Globe is written with a just appreciation of the importance of the public work to which it alludes, and with liberal and enlarged views as to the true interest of the public. The State of Illinois has already in the course of construction one of the most im-

portant public works in this or any other country.

The canal from Chicago to the navigable waters of the Illinois river, is a work of unusual dimension, and will cost from \$7,000,000 to \$10,000,000, and connecting as it does the "inland oceans of the west with its running seas," is not less important than any other public work—and only inferior to this is the great central Railroad from the mouth of the Ohio river through the point of junction of this canal with the Illinois river to Galena. These works, together with others to be undertaken by private corporations, are rapidly developing the resources and promoting the growth of this large and fertile spot.

ILLINOIS CENTRAL RAIL ROAD.

We have read with much interest and satisfaction the bill reported to the House by Mr. Casey from the Committee on Public Lands, granting a pre-emption right to this Company for a certain quantity of land, for a limited time, lying upon the route of a contemplated Railroad in the State of Illinois, commencing at the confluence of the Ohio and Mississippi rivers, running through the heart of the country, and terminating at Galena, a distance of near 500 miles. This proposed internal improvement unquestionably is of greater importance to the State, the government, and the whole Union, than any similar work yet projected. It will open the most speedy and direct communication at once from the navigable waters of the Ohio and Mississippi, from Pittsburgh and New-Orleans, to the farthest frontier settlement in the northwest, at all seasons of the year.—Such an highway to the Far West, must be of incalculable importance to the whole country, in the event of war upon our frontier borders; for, in a short space of time any number of troops, with all necessary munitions of war, could be transported from one section of the country to the other, and such a facility of transportation would render unnecessary a large standing army, or expensive fortifications, in the west, as was clearly and ably shown by the lucid report of Mr. Grundy. Those who may have travelled in Illinois in the winter season will attest to the almost impracticability of passing through that fertile State, except on horseback. And when the Mississippi river is closed with ice, which is the case for several months in the year, to near the mouth of the Ohio, (the commencement of the said Railroad) the communication with the Northwest Territory is almost suspended, except for the transportation of the mails. The expense and difficulty of constructing permanent roads will, until those immense tracts of land and prairie, owned by Government, are sold, and the country densely populated, prevent the construction of suitable post roads.*

It is estimated that exceeding twenty millions acres of public lands will be sold in one fourth the time than it otherwise would, without the construction of some such highway through the State. As a pecuniary consideration alone, this would justify the construction of a railroad through the public domain, at the sole expense of Government; but we deem the road more important, as offering the most certain and economical mode of protecting our extensive northwestern frontiers, by the rapid facility it will afford for the transportation of troops

* The freight on merchandize per canal is \$6 per ton on ascending, and \$5 per ton descending.

and munitions of war, in times of danger throughout the year.

We have reflected, however, upon the subject in a still more interesting and important light, as connecting the South and North with the West by the continual and rapid intercourse, and thus cementing the social feelings in more close and united compact.

It will be seen by reference to the map that the long desired project of uniting the Mississippi river with the Atlantic and Gulf of Mexico, by a railroad, will be accomplished by the extension of this central railroad to Nashville; and uniting there with the projected railroad to Charleston and New-Orleans, and connecting by branch railroads with the internal improvements commenced in the States of Virginia and Maryland, as it necessarily must, will make an uninterrupted line of railroads from the seaboard to the frontiers in the west, a distance, of upwards of thirteen hundred miles, which may be travelled in sixty-five hours. Missouri and Illinois will be peculiarly favored by the improvements now making to secure the vast trade of the Mississippi Valley. Besides the proposed railroad to the seaboard, in use all the year, the Illinois canal, now constructing to Lake Michigan, and the canal through the State of Indiana to Lake Erie, will open a direct water communication the whole distance to the city of New-York for two thirds of the year.

Emigration is fast pouring into Illinois, and the people of that State are looking forward with intense interest for the passage of the bill reported to Congress, as it will guarantee at once the commencement and completion of this grand enterprise. Seeing the effects of this extensive railroad in all its relations, we do not hesitate to predict that it will have a more important bearing upon the whole interest of the country than any internal improvement yet projected, and we trust that this bill, with others of a similar character now before Congress, will be favorably acted upon, before its adjournment, in order that surveys, as contemplated, may be made the present year.

EXTRACTS FROM THE

REPORT

OF WALTER GUINN, ESQ. ENGINEER,

To the President and Directors of the Wilmington and Raleigh Railroad Company.

GENTLEMEN:—I have the honor to submit the results of the reconnoissances and surveys, necessary for a selection of the route of the contemplated Railroad between Wilmington and Halifax.

A careful examination of the country led to the adoption of the following lines for survey:

WESTERN ROUTE.

This route commences at the "Dry Pond," in the South-East suburbs of Wilmington, thence running nearly due North to the head of Market street, it takes an Easterly direction to a favorable site for crossing Smith's creek at "Love Grove." After crossing Smith's creek, the route passes over a level plain, only broken by Prince George's creek, which it crosses between Mr. Burgwin's dwelling and the mill house to the North-East branch of the Cape Fear river, near the old bridge. The graduation of this portion of the route, consists of slight excavations and embankments in clean sand, and will be extremely easy of execution. From the Cape Fear, it may be run straight forty-seven miles, to Hackleberry pocosin, at the head of Bear swamp. Within

this distance, the route will cross Rockfish and Stewart creeks. With the exception of the bridges and embankments across these streams, the surface of the ground is so very level, that the chief work in the road-way formation, will consist of slight cuts no where greater than ten feet in depth, and embankments from two to three feet in height. The route traverses the ridge dividing the waters of Long creek from those of the "North-East," and passes about two miles and a half to the West of South Washington; and about seven miles to the West of Kenansville. From the head of Bear swamp, the country continues unbroken, until the route reaches Goshen; which is one of the head branches of the North-East. Here the first undulation in the plane of the road worthy of notice occurs, a descent and immediately an ascent of 30 feet to the mile is unavoidable, and some comparatively deep cutting, and heavy embankments are encountered. Immediately on ascending from the valley of Goshen, the route reaches a dry, level, open woods, through which it passes to Brook's branch. The formation of the Railroad on this portion of the route will consist, chiefly, in cutting down the large trees which over-spread the track, and hewing and preparing them for the reception of the iron rails.—After making a slight undulation in crossing Brooks' branch, which is a very inconsiderable stream, it arrives at the same level, on which it continues to the head of Yellow Marsh; along the margin of which it descends to the valley of the Neuse river, encountering in its descent, some heavy cuttings, which consist, however, entirely of sand. It crosses the Neuse at a very favorable place, just below the bridge on the stage road from Halifax to Fayetteville; thence passing near Waynesborough, the country wearing the same level aspect, with the exception of the breaks occasioned by the Nauhunta, Acocock, and Black creeks, the surface being almost perfectly smooth. It reaches Contentnea creek, about half way between Woodward's and Rountree's bridges. After crossing the Contentnea, until the route reaches Enfield, the country may be characterized as bold, compared with the uniform level aspect heretofore presented.

The soil also undergoes some change.—From sand to a substratum of clay, mixed with sand, which will be encountered in some of the excavations. On this portion of the route, Tossnot, Town, and Cokey swamps, the Tar river, Swift and Fishing creeks are crossed. These occasion a multiplicity of low summits, and an undulatory profile. The grades are, however, gentle, and the cuttings and fillings no where exceed fifteen feet. After leaving Enfield, the route gradually descends to a favorable site for crossing Beach swamp, just below the mouth of Bear swamp, along the borders of which, with very little variation from a level grade, and no other expense in the formation of the road-way, than the raising of a bank two or three feet in height, the route runs until it reaches Quaukey creek. Here occurs the highest embankment on the line of the road. It is, however, very short. From Quaukey, which is only a mile from the termination of the road, the route ascends very gradually until it unites with the Halifax and Weldon Railroad, about half a mile from Halifax, and seven miles from Weldon. At Weldon, the Portsmouth and Roanoke Railroad crosses the Roanoke river by a bridge—it also crosses the Petersburg Railroad about two and a half miles from Weldon, where the

two roads can be easily united; and thus a connection of your road may be formed with the Petersburg Railroad, or with the steam boats which now daily ply between Weldon and Blakely, they may be connected. In any event I can see no difficulty in the way of both passengers and goods, destined for Petersburg, by passing from your road to the Petersburg railroad, with as little delay and inconvenience, as to the Portsmouth railroad.

A description of the line which was run on the West side of Long creek to Bear swamp, and which will be brought into comparison with that portion of the Western route, from Wilmington to the same point, will appropriately precede the estimates of the "Western route," and will come in here. This line commences at the timber pens, and runs upwards along the margin of the river about a mile; thence it crosses over and passes along the dividing ground between the Cape Fear and its North-East branch, to nearly the head of Long creek. The road-bed in this distance will be formed of alternate excavations and embankments, consisting entirely of sand. Thence the line will pass on the dividing ground between Long creek and Moore's creek; and between Moore's and Rockfish creeks, and throughout to the head of Bear swamp, the ground is extremely favorable. Stewart and Turkey creeks are the only streams that are crossed.

Summary of the excavation, embankments, and superstructure.

69 miles, 1191 feet, at \$433,815:97
From this, there should be deducted the cost of six miles of superstructure, at \$3,800 per mile, this being the reduction which will occur in the actual location; which leaves \$411,015 97, the cost of this line.—This, compared with the first three items in the following estimate of the Western route, and the result in favor of the route on the East side of Long creek to Bear swamp, will be in the first cost, \$49,593 09; and in distance upon the probable line of location, 4950 feet. A comparison of the grades and curvatures, results in favor of the line on the East side of Long creek.—I have, therefore, based my estimates for the Western route of this line, supposing that the same reasons which have influenced me in the selection may also operate with the Board in according it the preference.—I have now to proceed with the estimates of the

WESTERN ROUTE.

Summary of the costs of excavations, embankments, superstructure, locomotive engines, coaches, cars, water stations, wharves, shops, contingencies, and steamboats.

161 miles, 3189 feet of Railroad, and 150 miles of Steamboat communication, \$1,500,000.

Careful and minute inquiries, with the view of ascertaining the practicability of a route through Rockymount, and also through Kenansville, by Rockford, resulted in the conviction of their being less eligible than either of the routes selected. It now remains to describe the character of the

EASTERN ROUTE.

This route pursues the trace of the western route to station No. 176; thence it takes a more Easterly direction, and traverses the ridge dividing the waters of the North-East branch of Cape Fear river from those of the New and Neuse rivers, until it reaches the Neuse at Rockford. On this portion of the route, we cross Smith's and Prince George's creeks, and several small

streams, which make into the North East. The general aspect of the country is extremely level and favorable to the contemplated work. From Rockford to Edwards' bridge, where the route crosses the Contentnea, there are no difficulties or streams to cross worthy of notice. From Contentnea the route ascends gradually to a level which is maintained for several miles; when it descends to effect a favorable crossing of Town creek; thence several undulations are necessary in crossing small streams, until the route reaches Tarborough.—Thence a level grade may be had entirely across Tar river. A favorable site for crossing which, is found about a mile and a half North of Tarborough. Thence the route alternately ascends and descends to lessen the excavations and embankments in passing Deep creek, Connecanary creek, and the ridges between them, until it enters the Western route five miles from Halifax, which it pursues to the Halifax and Weldon Railroad.

Summary of the cost of excavations, embankments, superstructure, locomotive engines, coaches, cars, water stations, wharves, shops, contingencies and steamboats.

162 miles—1504 feet of Railroad, and 150 miles Steamboat communication \$1,512,853 80—making the whole line of communication, by Railroad and Steamboats \$12 miles.

This shows the difference in cost in favor of the Western route of \$12,853 80. A comparison of the grades, length of curvatures, and straight lines, exhibits also a slight difference in favor of that route. On the Eastern route, however, there will occur a thousand feet less bridging, this, in the annual repairs of the road will operate in its favor, by lessening the amount some four thousand dollars per annum. The superiority of the one line over the other, in a professional point of view, is so very slight that an expression of my preference under this head, could not be a decision of the question of choice between them. The Board may, then, consider that I lay the routes before them as equal under all the aspects in which under my province I have been called upon to view them. Their familiarity with the resources and interests of the country bordering on the lines, will enable them to estimate and compare the amount of trade on each; a preponderance of which may very justly form the basis of a preference. I would beg leave, however, to add, that looking to a connection with the works which are contemplated between the Western parts of the State, and the seaboard, and to the lateral branches which are authorized by the charter, the Western route is decidedly to be preferred. But whether the Eastern or the Western route be selected, I can confidently assure the Board, that no portion of the United States, certainly for the great extent of country embraced, offers so many facilities for the construction of a Railroad. Timber of the best quality is found on every part of the line; the soil consisting either wholly of sand, or a proper admixture of sand and clay, affords as good a foundation as can be expected from earth alone. Granite occurs on the Tar river, and on Fishing and Quauky creeks; and will be used in forming the abutments of the bridges across these streams; and for the construction of drains within convenient hauling distance. Where rock is not convenient, wooden structures will be used in the passage of the water courses and ravines, to be substituted hereafter by stone or brick,

which can be delivered much more economically after the completion of the road.—The entire elevation of the road above tide water, is 189 feet. This is overcome by grades rarely so great as 30 feet to the mile. The whole length of curvatures on the road does not exceed thirteen miles; and in every instance, the departure from a straight line is effected on curves described with a radius exceeding a mile. So slight indeed are the grades and curvatures compared with many other roads in the country, that yours may be considered as straight and level; certainly as presenting every facility for the most extensive and economical application of swift locomotive power, to which Railroads owe their undeniable superiority wherever, as will be the case here, gravity has but a small share in the resistance.

[Concluded in our next.]

FIFTH ANNUAL REPORT TO THE STOCKHOLDERS OF THE WINCHESTER AND POTOMAC RAILROAD COMPANY.

Mr. Bruce presented the following Report, which was read and accepted:

At the last general meeting of the Stockholders, an expectation was encouraged by the Board of Directors that the road would be open for transportation as far as the Island of Virginia, a short distance from the Potomac, before the succeeding winter. This hope was expressed with much confidence, because all the materials required for its construction had been previously engaged; contracts for the superstructure, some of which were then almost completed, were made to expire in November following, and every arrangement was placed in a train likely to effect the desired object. It is true, that part of the iron, most essential to the superstructure, had not then arrived, though the Board had no reason to apprehend a failure, for a sufficient quantity had been long ordered and paid for in England. In that hope, however, disappointed, they purchased from a private importer one hundred tons at an increased price, in order to satisfy the expectations of the stockholders and community, and were upon the point of procuring more from the same quarter, when the long-looked for vessel, detained by adverse weather, arrived with the balance of the iron. When the quantity of materials which enters into the construction of a railway, and the distant quarters from which they come, are taken into just account, the reflecting stockholder will see cause for making due allowance for the delay of active operations, which none felt more than those charged with the immediate superintendence of the work.—This delay may have affected somewhat injuriously the interests of the community, but it is doubtful whether it had a similar influence upon those of the stockholder, who, with his associates of the company, must otherwise have incurred a very considerable expense in keeping the road open during a winter of uncommon severity, and remarkable for its depth and continuance of snow. Many settlements, which might have been apprehended from the passage of heavy engines with trains over untried embankments, on the dissolution of winter, were thus most probably avoided and the superstructure allowed time to acquire greater stability, so desirable at the commencement of heavy transportation.—Notwithstanding postponements repeated more than once, the interest felt for the successful opening of the work had but little abated; for our citizens welcomed the arrival

of the Tennessee on the 9th of March with as much cordiality, as if she had made her promised visit in the preceding December. On the 14th of that month regular transportation and travel commenced, with but one locomotive, and less than thirty burthen cars. This very limited supply of motive power, the Board could at that time alone command, owing to the unprecedented numbers of orders to be filled by the English workshops, before those of the Winchester and Potomac company were received. An agent sent, in part, for this purpose, and provided with funds deemed necessary, had ordered three locomotives, and iron work for such a number of cars as was thought sufficient for the first years of transportation. The tried merits of the English Engines, as the stockholders were informed at the annual meeting, induced the Board to adopt this course; indeed the machine shops attached to but few of the railroads in this country are adequate to the supply of their own immediate demands, no reasonable hope, therefore, of obtaining a supply for our wants was left in the United States—even if superior workmanship in the locomotive, and adaptation to security and economy in the cars, had not directed us to apply to foreign mechanics. With so small an array of machinery, it was soon found that the accumulate produce at Winchester, and merchandise at Harper's Ferry, could not be transported with reasonable expedition, though double duty was often exacted of both engines and cars—the Tennessee frequently running 128 miles a day. On the 31st of March, the day on which the road was opened with appropriate ceremony, the Baltimore and Ohio Railroad company, whose interests are identified with ours, and whose experience and zeal have uniformly enlightened and cheered us, promptly loaned the use of a powerful engine—and the timely assistance of the "Thomas Jefferson" will not soon be forgotten, in the history of our operations. Considerable disappointment to traders, was the consequence of the limited force of the company; and it is probable, that with those, not duly informed of the causes, this disappointment may have operated injuriously to the company's interest. A protracted and severe winter had crowded the early commercial business of the year into a very limited period of transaction—merchandise was thus suddenly accumulated at the various outlets of transportation—and the impatience of merchants was increased, with the well known anxiety of expectant dealers at home, for their spring supply of goods. We stood in the breach, urged on the one hand by the Baltimore importer, overwhelmed with business, and eagerly importuned on the other by the Valley merchant and distant Tennessean, greedy to realize the gain of their purchases. In addition to this unforeseen crowd of business, a difficulty, scarcely to be provided for, presented itself in the portage between the termination of our road and that of the Baltimore and Ohio Company. The room at the east end of the bridge at Harper's Ferry, always contracted, had been still more reduced by the two improvements which unite there; and the wagons which assembled at that point, to receive or deliver the neighborhood trade, greatly interrupted the drays and other conveyances employed to transport commodities between the two railroad companies. Had some of those merchants, loudest in the expression of their disappointment, visited that confused spot, on those days of scuffle for goods, and the

laborious turmoil of loading and unloading, they would have found cause to soothe their feelings; while it is readily allowed, that the interruption of the trade was in part chargeable to the inexperience of the company's officers, suddenly met by an overwhelming business, under an arrangement we may be permitted to say, susceptible of improvement by the Baltimore Company. A supply of cars, with the continuance of the engine loaned from the Baltimore railroad, enabled the company soon to meet with promptitude the demand for transportation. Early in June, grateful for the favor, we returned this locomotive, and soon after received a new and powerful one, imported on private account from England, in anticipation of the two others, ordered last year, and speedily expected on the road. A very considerable addition has also been made to the number of our cars, so that entire reliance may now be placed on our ability to transport with despatch all produce and merchandise consigned to our care.

With the exception of these early interruptions, referred to with regret, no disappointment has occurred in the regularity of our transportation of burthen, and scarcely any has marred the pleasure of the numerous travellers who have passed over our road. The depot bell has failed on but one or two occasions, when incessant rains had drenched our fuel, to sound its cheering note at the appointed hour of arrival; not one trip, however, has been lost, and the mail carried by the Company has always been delivered within the specified time. In these days, when we hear of accidents on railroads, seldom diminished as they circulate, by report,—it is not unworthy of a passing notice, as it certainly is a source of much gratification, to state, that no casualty, worthy of being mentioned, has occurred, either to affect the safety or comfort of the traveller, or the security of goods transported over the Winchester and Potomac railroad. The engines have performed uncommonly well,—one of them with an amount and continuity of service rarely known in the history of locomotives. The "Tennessee," for some time our only dependence, frequently ran over the road, 32 miles long, four times a day. Since first placed on the track, she has been, on but two or three occasions, slightly repaired by the machinist, and at an expense of not more than \$20. She has continued to run with great satisfaction, and with a speed and precision not to be easily excelled—having passed over, with burden and passenger cars combined, not much short of 10,000 miles in 130 days. Engines there are, no doubt, of much greater power, but we question whether any requiring less repair and less fuel, important elements in calculating the value of an engine, are to be found, combining at the same time equal efficiency with the "Tennessee." Though our superstructure is of stronger materials than those of railroads generally in the United States, our string pieces being 5 by 9, and sills 11 inches in diameter, we have seen no cause for regret, that our engines weigh less than those commonly used elsewhere—being well assured that high velocity and great weight are neither compatible with their own durable efficiency, nor the stability and duration of the road on which they move. Should our engines fail to transport the heaviest trains, we hope they will make up the deficiency, and save the levelling and repair of our superstructure, a serious item of expense to railroad companies. The untiring ingenuity of the

American mechanic, stimulated by the high premium offered for all inventions to diminish labor, and the wide field for the display of skill, free as the political atmosphere in which it grows, will doubtless soon discover a style of locomotive, better adapted to the localities of our railroads, and the mode of their construction, than any that are imported from engineers, denied a personal acquaintance with the wants of this country. Engines have been manufactured by American citizens possessing valuable qualities—those used upon the Baltimore road, are particularly distinguished for their power,—but the fuel they are designed to consume, renders them far too expensive for our inland region. From repeated observation, it is believed that, with little more than a cord of pine wood, our engines will generate as much power of steam, as a ton, of anthracite coal was found to produce in the one belonging to the Baltimore Company, while in our employment—that quantity of good dry pine being found sufficient to transport to Harper's Ferry from 250 to 300 barrels of flour and return with the weight of 20 barrels. The best pine wood ought not here to exceed \$2.50 per cord, while anthracite coal cannot generally be obtained for less than \$10 the ton, delivered at Harper's Ferry. With the imported iron mounting for our burthen cars, the Board have had reason also to be satisfied—fixed upon springs they can be moved at the rate of twelve or fifteen miles the hour with perfect security to the freight, generally two and a half tons to each car. The economy which has attended the union of them with the passenger cars in the same train, has fully convinced the Board of its propriety—while the safety and speed of the whole train, moving on uniform springs, and wheels banded with wrought iron, have, it is believed, in no instance, failed to command the confidence of the traveller,—no fracture in any wheel, though all much used, having yet been discovered. On railroad thoroughfares of much greater travel than be expected over ours for some time to come, the power of locomotive can seldom be fully employed in propelling passenger cars only,—the waste of power, thus incident, to such roads is not felt on ours, in a country where produce is generally plenty, and the business and the ability of our population furnishes a very considerable amount of neighborhood travel.

Commodious depots have been erected at each end of the road; but want of sufficient means of transportation, until recently, has prevented the Board, together with other causes, from accommodating to the extent of their wants the various neighborhoods designed for places of deposit. An increased supply of cars will soon supply the demands along the line of the road: and it is in accordance with the design of those heretofore charged with the management of the Company's concerns, that warehouses be constructed, particularly at those points provided with double tracks, by the Company, or by private individuals, under their authority—the latter system, it is thought, will happily blend individual enterprise with a just promotion of the interest of the company—better acquainted with the resources of the adjacent country. Owing to the difficulties of obtaining the right of way through the public grounds at Harper's Ferry, and providing the supply of timber of unusual size, of which part of the work there is necessarily constructed, that portion of the road between the Island of Virginia and the Potomac is now reaching its completion. The drayage required be-

tween this Island and the Baltimore railroad, which has caused very considerable expense as well as obstructions, and other inconvenience incident to transshipment will soon be avoided. The cars will be enabled in a few days to pursue their course to the bank of the Potomac, and it is intended that a temporary track, thence over the present bridge to the end of the Baltimore road, shall be immediately laid down, which will allow the convenient transfer of freight from the cars, placed side by side, of the two companies—so that merchandise from Baltimore need be detained but an hour or two at Harper's Ferry, on its way to Winchester. It will not be, however, until the viaduct, at present constructing by the Baltimore Company, is completed, that the mutual interests of each company will be entirely accommodated. That period is sincerely to be desired, and would have been nearer its arrival, but for the frequent high waters which have retarded the progress of the stone work. The piers have now attained their proper height—the superstructure is commenced—the timber for the whole is provided—one arch is in part raised, and one track at least is promised to be ready for the passage of cars, before the coming winter. Whether loading of particular merchandise may not then continue to Winchester, with the change only of motive power, will be matter for future deliberation—all delay at any rate can be avoided, and the agents of the two companies at the Ferry will be enabled to harmonize the interests of both, by united personal inspection.

Though much of the time, since the opening of the road, has been what is termed the most favorable season of the year for the prosecution of such works—it may be asserted, that weather more trying to the stability of the road, could scarcely have happened. The breaking up of winter was indeed succeeded by a track of dry weather, but a continuance of heavy rains followed, which seriously injured and impeded the operations of railroads much longer constructed than ours. The Shenandoah, during the highest swells, had almost re-taken the ground, we had stolen from its contracted channels—but our embankments resisted its formidable assaults, and although part of the work was at one time in considerable jeopardy, no damage of consequence was incurred, nor any delay to transportation. However difficult it may be to graduate a railroad through a limestone region, our limited experience would seem to pronounce, that if well constructed at first, it will be easily kept in repair—by its freedom from slips at excavations, and washing of embankments, and above all by its ready drainage through the numerous fissures which abound in a limestone formation. Elevated about nine inches above the graduated bed, upon trenches filled with broken stone, placing it beyond the general reach of frost—having sufficient fall at deep cuts to carry off the water which the crevices of the rocks may refuse—our promises to require but little expenditure in repairs. This property is deemed important, and ought to afford some atoning satisfaction to the stockholders, if the work should have exceeded the expenses originally estimated.

[Concluded in our next.]

From the Newburgh Journal.

NEWBURGH RAILROAD.—The resolution passed at the last meeting of the Directors of this Road, has given confidence to our citizens—has called public atten-

tion to the importance of our advantageous location upon the Hudson—and has materially raised the price of our property. That this road will be constructed is now certain. Mr. Sargent, the Engineer, has this week advertised for contracts for making the section between Chamber's Creek and Washingtonville, a distance of 10 miles. Sealed proposals will be received at the Company's Office, over Oakley and Davis' store, in this village, until the 10th of October, when they will be passed upon and the road will be commenced forthwith—and it is our full belief that in less than 18 months cars will be running into our village. The Directors are amongst the heaviest landholders in Newburgh, and their interest and long established character requires that this road should be finished as soon as possible.—They feel that it is all important that the section extending from Newburgh west to the Erie Road, should be made now, so that it can be used for the transportation of persons and materials to and from the New-York and Erie Railroad during its construction, for if our road be made it will offer advantages to the Erie Company of which they will be glad to avail themselves, and if they should eventually extend their road to Nyack, (an idea which we have always considered ridiculous,) who cannot see that, running through the rough, barren and mountainous lands of "Rocky Rockland," it will never be able to compete with the Newburgh Road, which will be shorter, and will pass through the rich fertile fields of Orange. Will passengers prefer the Rockland route? No. For ours would be more expeditious—far more varied, interesting and commodious, and will enable passengers to view Washington's Head Quarters, rendered almost sacred by historical associations—the beautiful Bay at this place—the Highland peaks and recesses—and West Point with its many attractions.—Would produce be taken on the former route? No. For the cost of carrying produce to market would be much less, for the reason that water communication is always cheaper and safer than land carriage of any kind. We would say then to the Directors, you have deserved high commendation for your recent resolutions and when you shall have carried them into execution our now prosperous village will become a city; and in place of six, will contain sixty thousand inhabitants.

THE CENTRAL RAILROAD.

We are gratified to learn that the President and Directors of the Central Railroad Company have engaged Mr. JOHN RANDALL, of Delaware, a gentleman of high standing and great experience in his profession, as principal Engineer, and Mr. L. O. REYNOLDS, late of this city, and favorably known to our fellow citizens, as assistant engineer of the contemplated Railroad from Savannah to Macon. Mr. Reynolds is expected to arrive here with a party in the course of a fortnight, and will under the direction of Mr. Randall immediately commenced the survey of the road at Ma-

con. Mr. Randall will be in Georgia on or before the first day of November next, and he will continue to reside in the State superintending the work until its completion. As the funds of the company are ample, there can be no doubt of the vigorous prosecution of this important work, and of its completion in the course of three years.

The Central Railroad Bank has commenced operations under the most favorable auspices. The building occupied by the Corporation on the Bay has been fitted up in a style creditable to those employed, and has advantages that probably no other edifice in the city presents, as it combines spacious rooms for all the requisite offices of the Company with a convenient site for public accommodation.

If we look beyond our city we find the Georgia Railroad Company successfully carrying on its banking business under the charter granted at the last session of the legislature, and the work on the road from Augusta to Athens rapidly progressing.

These two roads can and will, we think, be accomplished without pecuniary aid from the State.

That portion of the surplus revenue, in the Treasury of the United States on the first of January next, which will fall to Georgia, can (if accepted in the terms of the Deposit Law) therefore be made auxiliary in effecting the grand communication from the west and northwest to the seaboard of our State.

From the recent Report of Mr. Thompson, Engineer of the Athens Road, and from information derived from other sources, we are induced to believe that the proper point for the entry of the road from Knoxville is in Murray county. Georgians ask but for a proper spirit on the part of her Legislators. We trust that we shall at least, see a company incorporated by our next Legislature, with liberal aid from our State Treasury, to construct a road from the Tennessee line in Murray county, to a point on the Chattahoochee whence the road can branch—one way to Athens—another to Forsyth. By such a scheme, two-thirds at least, of the counties in Georgia, and a large proportion of citizens would be directly benefitted, while the people of the West would have the three important markets of Savannah, Augusta and Macon opened to their trade.

While on this subject, we take the opportunity to say, that we most cordially approve the contemplated Convention at Macon, in November next, and feel it to be highly important that this city and county should be ably represented there. Our fellow-citizens will doubtless send to the Macon Convention a delegation equal in talent and public spirit to that which so ably represented us at Knoxville.

We have already announced the projected iron Railroad from Milan to Venice. This gigantic undertaking is the first of the kind contemplated in Italy, and will be carried over the lagunes on an elevated causeway. Nature and every local circumstance combine to render this road

without a rival in Europe, either in utility or beauty; as this part of Italy has some of the finest towns—as Milan, Verona, Vicenza, and Venice—is enriched with a most fertile soil, is inhabited by seven millions of people, active and industrious, and having the safest and most capacious port in the Adriatic, it, consequently, presents the most favorable elements for the advantageous application of an iron railroad.—Though the distance between Milan and Venice is 150 miles, it will be run in the short space of seven or eight hours. Travellers, on descending the Alps, will hasten to offer the homage of their admiration to the former mistress of the sea, who will see revived that ancient commerce and industry which made her so renowned, and she will again be numbered amongst the most flourishing cities. We likewise learn that iron railroads are projected in the kingdom of Naples. Nothing can be more delightful than the idea of being able to travel through Italy in a short space of time; but nothing can be more certain, unhappily, than that this can never be accomplished by means of railroads, on account of the insuperable obstacles of the mountains, and the extent of the distances. In Austria, likewise, plans are laid for bringing its capital into more immediate communication with Lemberg, Trieste, and other interesting points of that country; but they must be without effect, and end in a total loss to the speculators who may make the attempt on a surface so mountainous, and having such a paucity of resources. Experience has already proved that railroads are only suited to level, wealthy and populous countries, as England, Belgium, and Italy, and are not calculated to traverse the rocks, snows and solitudes of mountainous regions. It is to be truly lamented that an invention so prodigious, and which is the glory of the age, should have bounds beyond which it is impossible it can ever be carried; that it, that it can only be applied to certain favorable parts—it being neither prudent, nor indeed possible, to travel along iron railroads in the night, and therefore they cannot be hoped to be advantageously substituted for the ordinary roads between places whose distances from each other exceed 150 or at most 180 miles, which may be easily accomplished in one day; for where the distances are great, and the difficulties presented by the ground to be gone over are much greater, the steps necessarily made during the night, and the delay of conveyances, take away entirely all the benefits of economy of money and time, which are the only important gains arising to travellers from this new mode of conveyance.—But for these restrictions, we should probably be soon able to travel round the world in six weeks.

INTERNAL IMPROVEMENT.—We are gratified to learn that Gov. Schley has conferred on Col. Brisbane, of South Carolina, the appointment of Engineer, (under a resolution of the last Legislature,) to survey the route of a Railroad (to be connected with the Cincinnati road) through

Georgia to the Seaboard, and that Col. B. will proceed forthwith to execute the duties imposed on him. Col. B.'s public and private character eminently qualify him for the task.—[Georgian.]

From the Repertory of Patent Inventions.

ON THE SOURCES AND COMPOSITION OF THE DIFFERENT KINDS OF GAMBOGE. BY DR. CHRISTISON; AND ON THE BOTANICAL ORIGIN OF GAMBOGE. BY DR. GRAHAM. The papers of which the official abstracts are subjoined, were lately read before the Royal Society of Edinburgh.

Gamboge was first made known by Clusius about the commencement of the seventeenth century, as a concrete juice from China. About the middle of the same century. Bontius conceived he had traced it to a particular species of *Euphorbia*, growing in Java and in Siam; from the latter of which countries the whole gamboge of commerce was at that time obtained. About the close of that century Hermann announced that gamboge was produced by two species of trees growing in Ceylon, which have been since often confounded together, but which are now designated by the names, *Garcinia Gambogia*, and *Stalagmitis gambogioides*. About the middle of last century, gamboge was referred Linnæus to the former of these plants, and his reference was generally admitted; but about thirty years later, Professor Murray of Gottingen conceived he had traced it satisfactorily from the specimens collected by Koenig in Ceylon, and information obtained by the same botanists in Siam, to a new species which he called *Stalagmitis gambogioides*.

Dr. Graham shows, from specimens and drawings sent from Ceylon, both by Mrs. Colonel Walker to himself, and by David Anderson Blair, Esq. to the late Dr. Duncan, that the plant producing Ceylon gamboge is neither *Garcinia gambogia*, as Linnæus thought, nor *Xanthochymus ovalifolius*, as conjectured by Dr. Wight and Mr. Arnott, nor *Stalagmitis gambogioides*, according to Murray and Koenig, but is a species described by Lamarck and Gartner under the name of *Garcinia* or *Mangostana morella*, although it differs from all of these genera in the structure of its stamens, and, therefore, probably ought to be considered a new genus among those producing a gambogoid juice.

Dr. Christison proved, that, at the present time, Ceylon gamboge is not an article of European commerce, and that the whole gamboge of the markets of this country comes, as in the time of Bontius, from China. After mentioning the analysis of fine gamboge made by Braconnot in France, and John in Prussia, he stated the following as the mean composition of the several varieties of gamboge he has hitherto examined:—

Pipe gamboge of Siam:

Resin	- - - -	72.2
Arabin	- - - -	23.0
Moisture	- - - -	4.8

100.0

Cake gamboge of Siam:

Resin	- - - -	64.8
Arabin	- - - -	20.2
Fecula	- - - -	5.6
Lignin	- - - -	5.3
Moisture	- - - -	4.1

100.0

Ceylon Gamboge sent by Mrs. Colonel Walker:

Resin	- - - -	70.2
Arabin	- - - -	19.6
Fibre of wood and bark	- - - -	5.6
Moisture	- - - -	4.6

Ceylon gamboge, adhering to a specimen of the bark sent by Mr. David Anderson Blair:

Resin	- - - -	75.5
Arabin	- - - -	18.3
Cerasin	- - - -	0.7
Moisture	- - - -	4.8

99.3

The proportion of the gum to the resin varied somewhat in each variety, but never differed more than two per cent. from the means given above.

The author added, that he had found the resin to be the active principle of gamboge.

He inferred from the composition of the different kinds of gamboge, and other circumstances detailed in his paper, that the cake gamboge of Siam is not entirely a natural production, but a manufactured article: that Ceylon gamboge, if freed from incidental fibrous matter, corresponds almost exactly with Siam gamboge: that therefore, they are probably produced by the same plant: that Ceylon gamboge possesses precisely the same medicinal properties; and that this variety, if more carefully collected, may, in all probability, be applied with equal advantage to every economical purpose which is at present served by the finest pipe gamboge of Siam.

A. T.

ON THE MATHEMATICAL FORM OF THE GOTHIC PENDANT. BY PROFESSOR FORBES. The following is the official abstract of a paper read before the Royal Society of Edinburgh, on the 1st of February last, as given in the "Proceedings" of that learned body.

The author commenced by stating the general proofs of the knowledge of the principles of equilibrium displayed by Gothic architects in the structures (especially) of the Pointed style. The adaptation of their edifices was to the combined ends of elegance and strength. The extension of this principle to the case of the Gothic pendant is the chief object of this paper. Sufficiency in point of strength, without redundancy of material, is considered by the author as the primary source of architectural beauty, which he has demonstrated to be the case when the depending Gothic drop is generated by the revolution of the logarithmic curve round its axis. The condition of maintenance of a depending body, is, that the increment of the section may be in a constant ratio to the increment of weight of the body to be sustained. This

is shown to be attained in the case of bare support, when the modulus of the logarithmic curve is equal to twice the modulus of cohesion of the substance of which the pendant is composed, in feet. Under these circumstances, the depending mass would be just within the limit of disruption, but its strength would be uniform throughout, and the tendency to separation would at no one point be greater than at another. It is not imagined that the Gothic architects could have had a mathematical knowledge of a curve, which was not attained till long after, but the degree of tact, by which the eye is guided in the selection and adaption of symmetrical forms, seems quite capable of explaining such an approximation to theory, which, it is believed, has not been before noticed. Thus, a depending cylinder appears overloaded at its inferior extremity, a cone towards its middle, and so of all figures which are not concave outwardly.

From the Journal of the Franklin Institute.

ON CALCAREOUS CEMENTS. BY JAMES FROST, CIVIL ENGINEER. NO. IV.*

Having seen the intense affinity between lime and water, we will now endeavor to examine the superior affinity between lime and carbonic acid, with which lime is always found naturally and definitely combined in the proportion of twenty-eight lime and twenty-two carbonic acid. It is also, generally or always found mixed, and seemingly in combination with other substances; for, in the purest white Italian marble I have always found some minute silicious particles. Yet, carbonate of lime we shall hereafter find is never chemically combined with those other substances—whatever may be the hardness or specific gravity of the mass;—and as this is seemingly a position of some importance in geological investigations, it will be hereafter adverted to in connection with another part of equal importance, when we have had the advantage of considering some other combinations of lime.

In England, lime is generally procured by calcining the carbonates in two different modes. The one and most frequent, is the cheapest and easiest in practice, but the lime obtained in this way is generally found inferior in quality to that obtained by the more troublesome and expensive process.

As lime of as good quality may be obtained by the easier process, we will endeavor to describe the necessary conditions. In the first mode, the carbonate is interstratified with the smallest and cheapest coal, in inverted lime kilns, and the fuel being in actual contact, acts with the greatest effect. The kilns are of the cheapest construction and maintenance, and being daily emptied of a portion of calcined lime, and daily charged with an equal proportion of fresh materials, the business is regularly conducted in the easiest manner—but the lime thus obtained is of a variable quality, from some causes which must be explained in order to be avoided.

* No. III. was published in the April number of this Journal, page 234, vol. XVII.

In the second mode the carbonates are piled in kilns so constructed that the fuel is burned in furnaces, and only the flame thereof admitted into the kilns to calcine the lime. In this mode, the coals used are large and of the dearest kind; more of them are required, as they do not act with so much effect; constant attendance is required night and day during the calcination; the kilns are more costly in construction and maintenance, and much expensive iron work is required.

If we calcine some limestone in an iron tube, or retort, set in a brick furnace, and then allow the retort to cool very slowly, while another portion of limestone is being calcined in a similar retort which is connected by an iron tube with the first, so that the carbonic acid gas may be conducted into the first retort, it will be there absorbed by the hot lime, which thus becomes uncalcined as it were, and is recarbonated more or less, according to the care taken in conducting the experiment.

If we now inquire why the first mode is so uncertain, we shall find that the kilns are commonly constructed about equal in diameter and depth, and that the most careful workmen find it difficult, or impracticable, to draw the calcined lime, so that portions of it do not intermix with portions of the uncalcined and of the fuel. In which case, a portion of uncalcined lime escapes calcination, and a portion of that which is calcined becomes more or less uncalcined, and a very irregular article is thus produced.

If lime kilns were always constructed of two or three diameters in depth, careful workmen might always draw without intermixing the calcined and uncalcined strata in the kilns, and a good article would always be produced at the least expense of time and trouble, and that this mode will succeed in practice with any description of limestone, will be apparent, when we state that the most difficult carbonates to calcine are those employed in the production of cements, which must be sufficiently calcined to become tender for grinding, while from their chemical qualities they are easily fusible with a small excess of fuel; now as these carbonates are well calcined in such kilns, it must be evident that all may be so, as no others can, from their nature, be so difficult to manage.

In either of the two modes of calcination the lime is allowed to cool in contact with the atmospheric air, and this we have already seen is essential to the production of lime. For, if having calcined lime in a reverberatory furnace, wherein coke has been used for fuel, and if then a fresh supply of fuel be added, and the supply of fresh air prevented to the furnace and to the chimney, by closing the apertures thereto, and the lime be thus allowed to cool, it will absorb and condense much sulphuretted hydrogen as well as carbonic acid gas, and when cool, will be incapable of slacking with water, and if pulverised and tempered with water, it will set as cement, for a long time thereafter, exhaling the peculiar odor of sulphuretted hydrogen.

If, when the lime is about to be thus cooled in a reverberatory furnace, a portion of pine wood is added to the other fuel, the lime when cool will be found nearly black throughout its whole substance by the vapor of carbon which has penetrated and been condensed therein; a black cement has been thus obtained, colored probably, as some black marbles are found by analysis to be; the Kilkenny or black Irish marble, owing its color to its containing two per cent more carbon than white marble, which always holds twelve per cent combined with oxygen in its carbonic acid, and Kilkenny marble holds only two per cent more, but being uncombined, it acts as coloring matter, showing what a great difference in sensible qualities is made by a small difference in the quantities and chemical arrangement of the elements of solid bodies.

Every different species of carbonate requires a different quantity of fuel for its due calcination, the argillaceous varieties requiring a quantity very nearly proportioned to the carbonic acid in them; hence, the inference is, that the heat evolved is essentially employed in converting the acid into permanent gas. Thus, two measures of small Newcastle coals, are required for the calcination of ten measures of Thames chalk, and is sufficient for fifteen measures of Roman cement stone; but as this latter substance is about one third ferruginous and argillaceous matter, it would seem to require the expenditure of little fuel for that portion. As a measure of chalk is about twice as heavy as a measure of coals, it follows that ten pounds of coals are required to calcine 100 of carbonate, or one pound coals to 4.4 pounds carbonic acid; but as eighty-four pounds of the live coals would heat and evaporate twelve cubic feet of water, one pound of coals would heat and evaporate nine pounds of water. We thus find by rather a rough process, but from facts correct enough for general reasoning, because derived from operations conducted on the large scale, that the latent heat in carbonic acid gas, is about double the latent heat of steam.

If 37 parts hydrate of lime is placed in contact with 22 of carbonic acid, the nine parts of water in the hydrate will be all expelled, and the carbonic gas combining in a solid form with the lime gives out its latent heat, which being taken up by the water, it escapes in the form of vapor, or steam of superior elasticity to the atmospheric pressure, although its temperature is insensible, this very curious or rather wonderful fact, and others, hitherto, I believe, wholly unnoticed, we shall see amply verified when we examine the properties of cements.

NEW-YORK AND ALBANY RAILROAD.—I should not be forgotten by the friends of this important Railroad, that the books of the Company will be opened at the Farmers' Loan and Trust Company, No. 34 Wall-st., 15th, 16th, and 17th, of the ensuing week. The importance of this stock and Railroad, as the terminating link on both our great

lines to the West, as well as to Boston, on the East, is too evident to require a remark from us.

We annex the following from the Albany Daily Advertiser and New-York Times—and call upon every friend of the work to come forward.

NEW-YORK AND ALBANY RAILROAD.—The subjoined is from the Albany Daily Advertiser.

There is no reason why our intercourse with the metropolis should be cut off for four months in a year. Let the road be made, and Albany will be as thronged in the winter as it is in the summer, and it will do as much business. It is computed that at least 1500 passengers a day traverse the Hudson between the two cities. This number, at \$5 a passenger, (which is only half the fare asked by the stage proprietors,) would give the enormous revenue of \$720,000 for the four months alone. During the remainder of the year the travel would be large, because passengers for pleasure or health would take this route either up or down, while the way travel between the numerous and flourishing towns inland, would be astonishingly increased.—We really hope the project may be successful.

The New-York and Albany Railroad will form a most important link in the chain of internal improvements, extending from this city to the far west. From Albany westward, as far as Buffalo, charters have been granted to private companies for the construction of railroads, and in the course of a very few years, there will be a continuous line from that city to Buffalo, and other points at the western extremity of the State. The importance of the construction of this road is so obvious, that it is unnecessary—in these days of internal improvement, when the advantages of that glorious system are daily developing themselves more and more—to dwell on it. It is not alone, however, as a medium of conveyance between this city and Albany, and as a part of that great line, which has the far and fertile west as its goal, that this railroad is of importance to our citizens. There is a fertile territory nearer home, a region of country rich in resources, and inhabited by an industrious and intelligent population, within a comparatively short distance from our city, which has heretofore been, to a certain degree, a comparatively isolated section. The construction of the Erie Canal gave to the inhabitants along its line, advantages equal to those possessed by many, who, so far as geographical distance is concerned, were in the vicinity of our city. The inhabitants of the eastern sections of our river counties, and of western Massachusetts and Connecticut, have, so far as facilities for a market are concerned, been as far from the city of New-York as the farmers at the western extremity of the

Erie Canal. One of the advantages of the New-York and Albany Railroad will be, the furnishing facilities for transportation to the most fertile part of Massachusetts and Connecticut. Both of these States will construct branches to meet this main line, and add to the income estimated by the Albany paper. We learn that the inhabitants along the proposed line of road, are so deeply impressed with its importance to their interests, that they are determined to secure the subscription to the stock. Our citizens should step forward and lend their pecuniary aid to this noble work. It will give a new impetus to our fast increasing business, and add, as the opening of every new avenue must add, to the wealth and population of our city. The estimate of the Albany Daily Advertiser takes into consideration but a small portion of the business which must be transacted on this road. We trust that we shall soon be able to announce that the work is in the course of construction.

NEW-YORK AND ERIE RAILROAD.—The Directors of the Company, at their meeting on Tuesday, decided finally upon Tappan Landing, as the point on the Hudson where the road should terminate. It is about 24 miles from this city.

EXTRAORDINARY RECEIPTS ON THE UTICA AND SCHENECTADY RAILROAD.—We perceive by the Report of the Treasurer, G. Hawley Esq., that the number of passengers carried through during the month of August amounts to 12,146, and the way passengers to 6,340, and the receipts in tolls for passengers alone—as this road is not yet allowed to take freight—amounts to the enormous amount of \$43,676 91: exceeding 3 per cent. upon the entire disbursements of the company to this time.

This fact alone must give courage and spirit to the friends of Railroads in every part of the country.

From the Albany Evening Journal.

UTICA AND SCHENECTADY RAILROAD.—It will be seen by the following official statement, that the Utica and Schenectady Railroad earned upwards of FORTY-THREE THOUSAND DOLLARS in the month of August. This sum is much larger than its most sanguine friends ever anticipated:

Statement of the number of passengers, with the amount of money daily on the Utica and Schenectady Railroad, from the 2d of August to the 1st of September, 1836—being for one entire month.

Day.	No. of passengers thro'.	No. of way passengers.	Amount received.
Aug. 2	365	120	\$1,327 86
" 3	371	139	1,256 43
" 4	355	216	1,261 87
" 5	361	126	1,270 43
" 6	348	239	1,275 66

Sunday	" 7	149	108	538 24
	" 8	321	244	1,209 36
	" 9	387	217	1,382 15
	" 10	443	135	1,574 53
	" 11	440	181	1,520 86
	" 12	431	180	1,402 67
	" 13	403	220	1,426 67
Sunday	" 14	148	106	563 62
	" 15	375	265	1,405 55
	" 16	573	283	2,044 37
	" 17	462	224	1,729 44
	" 18	451	259	1,722 10
	" 19	432	198	1,692 52
	" 20	412	86	1,447 42
Sunday	" 21	222	215	781 36
	" 22	265	257	3,314 48
	" 23	402	244	1,468 92
	" 24	577	236	1,991 68
	" 25	571	280	2,015 43
	" 26	436	213	1,530 55
	" 27	415	256	1,485 68
Sunday	" 28	141	93	528 36
	" 29	371	275	1,443 85
	" 30	411	251	1,493 02
	" 31	492	256	1,748 98
	Sept. 1	533	215	1,832 85

Total 12,146 6,340 \$43,676 91

A true statement,

GIDEON HAWLEY, Treasurer.

Albany, Sept. 5th, 1836.

A MAGNIFICENT EDIFICE.—There are 3000 workmen at St. Petersburg, engaged upon the new cathedral of St. Isaac. The outside of the cupola is to have 24 columns of granite; the portica is 100 feet in length, and supported by 41 columns, with bronze capitals and vases.

ANALYSIS OF RAW SILK. BY MR. J. W. LAIDLAY.—A. A hundred grains of yellow raw silk were digested in moderately strong alcohol, which soon assumed a fine orange tint. At the end of some days, much color remaining unremoved, heat was applied, and the solution boiled. The alcohol was then decanted, and successive portions of the same solvent were employed, till the silk appeared perfectly decolorized [decolorated]. The solutions were then reduced to a moderate compass by distillation, and on cooling, deposited a feeble, cloudy precipitate, which subsided slowly. The clear fluid being decanted, and evaporated at a gentle heat, to dryness, left a deep orange brown mass which weighed 0.9 grains. This substance was adhesive, fusible, scarcely, if at all, soluble in water, but readily so in alcohol, to which, in small proportions, it communicated a fine orange tint. A concentrated solution deposits on cooling a vast number of minute shining crystals, which subside to the bottom in the form of a brilliant orange-brown powder. When this precipitation has ceased, the solution lets fall, by spontaneous evaporation, a few filamentous bunches of a white color, and apparently fatty nature; but in quantity too small for more particular examination.

B. The flocculent precipitate above mentioned, being collected and dried, weighed, 0.1. It had the consistency, fusibility, and other sensible properties of wax.

C. The silk, still perfectly elastic, was now transferred to a deep silver vessel, and boiled with successive portions of distilled water as long as any sensible action was produced. A colorless, opalescent solution was obtained. It was frothy and viscid; and exhibited scarce any tendency to deposit the particles it held in suspension. A solution of bi-chloride of mercury, cautiously dropped from a graduated tube, threw down a bulky coagulum, which, after boiling, became much condensed, and permitted the easy decantation of the clear fluid. This precipitate, well washed, and dried, weighed, (deducting 1.4 grains, the amount of metallic salt employed) 8.9 grains. It had all the well known characteristics of albumen.

D. The clear fluid decanted in process C, being evaporated to dryness in a steam-bath left a nearly colorless, transparent, brittle mass, resembling gum. It weighed 13.0 grains, and had a tendency to soften, from the presence of a small quantity of deliquescent salts. It dissolved readily in water, from which neither the bi-chloride nor tan threw it down. It exhibited no tendency to gelatinize, however concentrated; and was copiously precipitated by sub-acetate of lead.

E. Alcohol now took but a feeble tinge from the silk, which still retained a little harshness. A very dilute solution of caustic potash was accordingly exhibited; and after a few hours digestion, was poured off, exactly neutralized with muriatic acid, and treated with the bi-chloride as in process C. The precipitate of albumen thus obtained weighed 0.4 grains.

F. Finally, the silky fibre, which had now attained its full lustre and flexibility, weighed 76.5; exhibiting a loss of 0.6 upon the total, attributable to hygrometric moisture; the whole of the products being dried at a steam heat immediately before weighing. The following are the results of the analysis:

A. Resinous coloring matter, and white filamentous substance,	0.9
B. Wax,	0.1
C. and E. albumen,	8.9
D. Mucus,	13.0
E. Bleached fibre,	76.5
F. Hygrometric moisture,	0.6

Grains, 100.0

An analysis of white silk gave identical products; and in amount differing only fractionally from the above; except in the particular of the resinous coloring matter, which was indeed present, but in a very much smaller proportion. It is probable that the varieties of color observable in cocoons, the yellow, the orange, the buff, the white, and the greenish hues, depend only upon the greater or less amount of this resin in the fibre.—[Journal of the Asiatic Society of Bengal, vol. iv., p. 710.]

A. T.

AGRICULTURE, &c.

We have received the Edinburgh Quarterly Journal of Agriculture for June, from which we make copious extracts.

HORTICULTURE—COMMON CABBAGE, EARLY YORK CABBAGE, LONDON NEW YORK CABBAGE, SAVOY, BROCCOLI, AND EARLY WHITE WARWICK PEA.

By Mr. Towers, Author of the Domestic Gardener's Manual, &c. C. M. H. S.

The *Brassica*, or cabbage tribe, presents us with the most important crops of the season, I mean the period included between the first of June and the two succeeding months. It is proposed to select three of the numerous species, namely, 1st, Common round-headed or hearting Cabbage,—2d, The *Savoy*,—3d, *Broccoli*.

1. THE COMMON CULINARY CABBAGE, *Brassica oleracea*, Sect. 4. of Decandolle, No. 4. *elliptica*, the early York and particularly that fine improved variety, now called London new York Cabbage. All the members of the tribe belong to one family or genus, termed *Brassica*: they are found in the natural order *Cruciferae*, the leading characters of which are four opposite petals, ranged in the order of a cross; there are four petals or calyx-leaves, six stamens, two of which are rather shorter than the other four, and this latter circumstance gave rise to the name selected by Linnæus to designate the members of his 15th class *Tetradynamia*, a compound Greek word, which indicates the power or supremacy of four out of six fertilizing organs. It may be of some importance to the farmer and cottager to be informed that, among all the plants of this class or natural order, not one perhaps is possessed of any really deleterious property. Among nearly one thousand species, as Dr. Lindley observes, "scattered over the face of the world, all are harmless, and many highly useful."

The varieties of the cabbage are numerous, but he who possesses the best early York, has that which combines most of the valuable qualities of that excellent vegetable,—compactness of heart, firmness, sweet flavor, and convenient size and form; it is also hardy, of very ready culture, and occupies but little space. I do not recommend it merely as a culinary vegetable; it might, and I think should, be made to rotate with the crops of the farm. It is not my desire now to digress, but I hope on a future occasion to adduce facts which will go far to prove that every farm throughout the kingdom would be improved, and the agriculturist proportionably benefited, by a greatly enlarged rotation. The land has powers and capabilities to double its productive return: We southerners are much indebted to our northern brethren for the lessons of wisdom which their refined system of agriculture has already taught us, but these cultivators, skilful and persevering as they have effectually proved themselves to be, may still advance; and with this conviction before me, I hope I may not be deemed presuming, if, at the earliest opportunity, I venture to attempt to fulfil the intention which I have alluded to above, and for which I am collecting the requisite documents.

The soil for cabbage should be a sound mellow loam, of a quality usually termed *fat*, or unctuous, wherein the *silex*, which forms its chief constituent, is in a state of extremely minute division, and united to a greater proportion of argillaceous earth (*alumine*), than most common, gritty soils are; but the chief desideratum of an unctuous loam is the impalpable state of the *silex*; for I have analyzed one of the finest loams I ever saw, without being able to detect in it more than five or six per cent. of clayey substances, and scarcely a grain of chalk. But the cabbage will do well in most soils, provided it be exposed to the full influence of light and air, and be not shaded or stifled by trees, shrubs, or buildings.

SEED.—This will retain its vegetative power for three or more years, but it is always better to employ that produced in the preceding season, or if two or three year old seed be used, it should be tried in heat, sown in a flower-pot: a serious loss of time may be occasioned by a failure of the seed-bed. An ounce of seed will suffice to sow forty square feet, if scattered broadcast, but less will be required, if it be sown in drills, six or seven inches asunder; and this method is always advantageous, because the Dutch or thrust-hoe can, at any time, be passed easily between the rows. If cabbage be cultivated in the field, it is calculated that half a pound of seed will afford more plants than will grow on an acre; and it is stated, in recommendation of the vegetable for the purposes of the farm, that if the cabbages be cut, freed from bad leaves, and carried to the cow-yard, "they are more beneficial than hay, given in any proportion, when only combined with straw."

"In the fattening of neat cattle, an acre of good cabbages may be nearly sufficient for three beasts of from forty to fifty stones each, which have been grazed in the pasture during the summer. A middle-sized bullock, in general, consumes about 100 lb. in twelve hours."* "Half an acre will be nearly sufficient for 100 sheep, when the crop is good: a sheep consumes nearly 10 or 12 lb. in twelve hours."—(*Baxter's Agric.*) I have repeatedly tried cabbage in cow feeding, and on every account recommend the substitution of *York cabbages* for the coarser and more bulky varieties.

In garden-culture, we have to consider the object of the cultivator; if spring or early summer cabbage only be required, one sowing of a single long row or a small bed will suffice. In the southern or middle counties of England, it is usual to limit the period of sowing between the 6th and the 12th days of August; but in the north, I presume that the third or fourth week of July should be chosen. Experience has proved that seed sown early in July, will

*There must surely be some error in this statement, of an acre of cabbage being able to fatten nearly three beasts of from 40 to 50 stones each: 100 lb. of cabbage in twelve hours, that is the average number of hours of day-light in each day, for twenty weeks from the end of October, will amount only to 6 tons 5 cwt. Now a middle-sized ox will, in that time, consume 30 tons of Swedish turnips. Do 6 tons 5 cwt of cabbage yield as much nutriment as 30 tons of Swedish turnips?—Ed

produce plants which are liable to run to seed in the following spring; while, on the contrary, the plants of late sowings rarely acquire strength sufficient to resist the rigors of the winter. The soil for a seed-bed ought to be lighter than that used during the future growth of the plants; it should be moved to the depth of a few inches, and made very fine: then, the line being strained tight, the first drill is to be cut by drawing the angle of a the in hee direction of the line, with its edge resting against it. An inch or less in depth is sufficient; but, as all seeds rise better if they rest upon a true surface, and be closely embraced by the mould, it will be proper to level and compress the bottom of the little drill by patting it with the back of a wooden, round-headed rake, or by placing a long pole, like the handle of a rake, into it, so as to form a sort of groove. In this, the seeds are to be scattered as regularly as possible, after which it would be as well to dust them over regularly with a powder composed of two parts (say pounds) of powdered quick-lime, one part of coal-soot, and one sixteenth part (one ounce) of flour of sulphur. This mixture is inimical to insects, and does not injure the young plants. The groove is next to be filled up with fine earth, which is to be made firm and even, by pressing it down with the flat of the spade. In like manner, all the other drills may be made and finished. If the weather be showery, and the ground in a moist state, but still free and open to work, nothing more need be done. It sometimes happens, however,—as was the case to a very injurious extent throughout the summer of 1835,—that the soil is found dry even to dustiness. In that case, as it will not answer to let the critical period pass over, the intended bed should be watered copiously for three successive nights, till it become completely moist, and a mat or two must be thrown over it during the intervening days. Seeds sown in soil thus prepared, will vegetate very rapidly; for warmth and moisture are the prime actuating agents of vegetative life, as direct solar light is that of maturation. Waterings, or rather the ordinary sprinklings, so termed, will prove of no avail, if the seeds have been sown in arid soil, as was fatally proved last year. In hot sunshine, the mat ought to be used till the seeds vegetate. The seedling plants will be liable to the attacks of slugs and other enemies; to guard against which, they may be sprinkled with a little of the powder mentioned above; or the spaces of soil between the rows may be covered with dry saw-dust or chaff; but thick sowing is perhaps the most effectual means to secure a sufficient supply, and it is always prudent to practise it, because many seeds are inert; and it is better to displace the supernumeraries by timely thinning, than to have a paucity of plants, nine-tenths of which may perish by accidents. When the first true leaves appear, and acquire a little strength, much of the danger will be past, and the plants ought to be thinned out, so as to stand an inch asunder. Again, as they advance in growth, they ought to be reduced in number till double that space intervene between plant and plant.

TRANSPLANTING.—Some gardeners have attempted to obviate this operation; but the roots first produced are few in number, though strong, and of considerable length: the plants also acquire a tall and shanky growth; and above all, it is evident that, if cabbage plants be made to perfect their growth on the site where the seeds were sown, the allotted space must be very great, because they must be thinned out so as finally to stand one foot asunder at the least. Transplanting, therefore, should be practised, and that, too, as soon as the young plants have become three or four inches high, and begin to crowd each other. The operation effects two or three good objects. It causes the roots to produce a number of short fibres, or, as it is termed, to become "stocky;" it dwarfs the plants, and, while making them strong and compact, secures them to the soil; and it enables the grower to protect those left in the seed-bed (as some always should be) by coverings of mats thrown over arches, formed of hoops or pliable rods, in the event of very severe weather.

In transplanting, let the bed or plot be a good firm loam, if possible, pretty well manured, thoroughly digged, and in a free, open situation. Select strong plants of nearly equal growth, and insert them in rows by means of a dibble or trowel, fixing each firmly in the soil, eighteen inches apart *every way*, if the variety be a free grower; but the small Yorks will do very well if the rows be that distance apart, the plants standing only twelve inches asunder in the lines or ranks. It is indispensable that the soil be brought closely to the roots, and made to press them firmly in every part; and should the weather be dry, much time will be gained by making the holes so deep as to receive the plant to the full length of the stem of each, and filling every hole brimful of soft water: then, by pressing the soil laterally and on every side with the tool, the roots will become puddled in, and secured at once. The period for the work must depend upon the growth in the seed bed; and if the season be early, and the weather warm and showery, the transplanted cabbages may grow so rapidly as to require the check of a second removal, or at least to be raised up and re-set; but in general, and under ordinary circumstances, it will be sufficient to leave them undisturbed, as then the crop will be ready for culture at a more early period of the spring. In the south, it is no uncommon circumstance to cut fine-hearted cabbages in April, and very good ones in May. In the north, the growth must be more tardy in most situations.

The seed-bed will require care and attention. I have said that some plants ought to be left in it; and I urge the practice, because, in severe winters, the entire crop is sometimes cut off. The seedlings remaining ought, however, to be raised up; the longest roots cut back nearly one-third, and the plants be re-set in regular order and distances. Thus, supposing that 200 plants remain in it, and be made to stand four inches apart in rows which are six inches asunder, a bed little more than twelve feet long and about three feet wide, inclu-

ding its edges, will contain this valuable stock, which in severe weather could be covered by three or four garden mats, and thus secure a pretty ample supply of plants for the spring. Another precaution may always be resorted to. In transplanting, deep drills or grooves can be formed by the hoe or spade, and along these the plants may be set so deep, that the lowest leaves may stand just above the soil. I adopted a still more efficient plant of security last October, though I do not recommend it because I think the growth in the early spring months is thereby retarded. Having a piece of ground set up in ridges, nine inches high, and the time pressing, I planted my young cabbages in the bottom of the trenches between the ridges. On three occasions the thermometer fell twenty-two degrees below the freezing point, and not a plant has been touched, though no covering was applied at any period of the winter.—My broccoli, also, has stood in perfect security, in consequence of the stems being lower than the level of the edges of trenches made expressly for them. However, as cabbages ought to be hoed freely in the autumn, and the spaces between the rows digged once or twice, as soon as the plants resume growth in the early spring, it is evident that the ridges present an obstacle to these important operations. If the winter prove mild, the cabbages will progress in some degree; but if by cold they be rendered torpid, they will start into growth with the early return of solar influence: a few may fly up to seed, but the greater part will form hearts, and can be cut in succession. In cutting, it will be prudent never to take off the green and healthy leaves: those that are inert and yellow, will scale off of themselves, or with the slightest effort: but the green and firm ones have still an important office to perform, in perfecting the axillary buds which produce young sprouts. These secondary cabbages, or "greens," affect an open growth, and in themselves furnish a delicious vegetable, but they may—that is a portion of the best formed among them—be devoted to another purpose of considerable utility in garden economy. The shoots when about five or six inches long, are to be gently twisted off from the stem, and the lacerated heel of each being trimmed perfectly even and smooth with a very sharp knife, but not shortened; the young plant thus rendered a cutting is to be very carefully planted in lightish, sandy, fresh moved loam, so deeply as nearly, but not quite, to include the entire stem. The setting-stick or dibble is to be thrust diagonally into the ground in three or four places, in the direction of the heel, so as to fix it firmly in the soil, and then a little water should be given to each plant to wash the earth closely about the stem. Detached shoots so treated, will frequently produce roots speedily, and bring a supply of excellent secondary cabbages, true to the original varieties: seeds are apt to sprout, owing to cross impregnations.

To sum up the chief points of cabbage-culture for spring and summer main crops, it must be observed that the period of sowing should be strictly attended to: the seed

beds are to be slightly hoed to keep the ranks clear of weeds; the stronger plants are to be timely removed to the final beds, wherein two autumnal hoeings and a moderate earthing up must be given during the progress of growth. On the approach of spring, the intermediate spaces are to be digged or forked, after the removal of the inert leaves, and the operation should be repeated when the plants evince the tendency to fold up their inner leaves for hearting.—By a careful attention to these needful processes, a bed of fine cabbages will, in favorable seasons, be secured. Having thus dwelt so minutely upon the routine culture of the cabbage for the main spring and summer supply, I shall only allude to that part of the treatment of succession crops, which refers to the summer and autumnal months.

It is usual to give directions for sowing the seed at several distant periods; but my object is to obviate trouble, and to simplify operations as much as possible; and as I have proved that, by attentive management, a regular supply of fine plants may be obtained from one extra sowing, I shall presume that an extensive seed-bed or plot exists, having been prepared late in March or early in April. The mode of culture will be understood by the directions already given: what, therefore, remains to be said, will apply to the order of routine which ought to be observed subsequent to the first of June. At that time, we may suppose that the greater part of the cabbages have been cut, the stems remaining being left for the production of sprouts. The seedlings of the April bed that are in a state to be transplanted, should be carefully selected, and set in a bed of rich soil, watered, and attended to in every respect as were those of the spring crop. This first bed, with the cuttings of the sprouts, and the other shoots yielded by the old stems, will produce an ample supply of a second crop during July and August.

After the removal of the seedling plants, those which remain in the seed-bed should be gently lifted and replaced, but at regular distances three or four inches apart; the ground should be moved, cleared of weeds, made level, and well watered if the soil be in a dry state. Should the plants be very numerous, a hundred or two of the best might with great advantage, be moved to a succession bed to stand in rows, six inches apart, plant from plant. Thus they will acquire stocky roots, and be checked for a time; while the seedlings will gain strength from the additional space afforded them.—If a bed be formed and planted for cabbaging in June, and thence every two months; and especially if—as I must presume—a previous transplantation had already been made during May, it is obvious that a succession of crops will be secured during every favorable season till the end of October; and I may add, from positive experience, that if the weather be then fine, and the succeeding winter prove open and mild ("a green yule"), any remaining stock in the seed-bed, however long-shanked and ungainly they may be, if set deep in the soil of a well prepared bed, may make good

progress to the end of November, survive the winter, and produce excellently hearted and sweet-tasted cabbages in April. Small they will be, and some perhaps will fly to seed; but those which do succeed, will amply reward the attentive care of the grower. My experience applies, of course, to the latitude of London, though in a county far westward, and much later in its productions; but I presume that in the north also these hints may be rendered to a certain extent available.

2. **THE SAVOY, BRASSICA OLERACEA BULLATA** of De Candolle,—a variety distinguished from all other hearting cabbages by the puckering of its leaves. It is one of the prime winter vegetables, and well merits the attention of every one who has a garden or kail-yard. There are three subvarieties—the large yellow, the green, and the smaller green, which is the hardiest of the three.

The savoy must be sown pretty early in the spring, and therefore I say nothing now of the early processes of its culture; but as it will require transplanting to plots where it is finally to remain, it will be needful to observe, that, as in all respects the intermediate culture will, as nearly as possible, resemble that of spring sown cabbage, the directions above given will apply to it. In England it is customary to transplant at two or three periods of July for the winter supply; but it will be proper to commence the work earlier in the north, and to finish by the middle of that month. The ground should be well digged and pulverized; the texture rather light, and the quality rich.—Draw drills or shallow trenches about thirty inches apart; tread along the drills or press them with a broad pole, till the soil become smooth and compact; then plant the savoys eighteen inches asunder, filling the holes with water, and fixing the roots firmly in the soil. After they have become established, and begin to grow, the spaces will require the hoeings and diggings which are so essential to the progress of plants of all the cabbage family, and have been before alluded to. As winter approaches, the earth ought to be brought up to and about the stems.

The planting in open, manured trenches, in dry weather will not only secure the growth of the plants, but greatly tend to protect them from frosts during winter.—Savoys are not considered to be in perfection, till they have been exposed to a degree of frost; and they will subsequently furnish the table throughout the winter months.

3. **BROCCOLI**.—This variety of the cabbage tribe is divided into a number of subvarieties, all of which are excellent furniture for the garden. By Professor De Candolle it is placed in the sixth division of his arrangement, *Botrytis* (*Brassica botrytis*) i. e. resembling a bunch or cluster of grapes, but this grape-like species or variety admits of another sub-variety, as No. 1 is the cauliflower, *Cauliflora*, or flowering cabbage; but No. 2 is the broccoli, and is designated as *Asparagoides*, or asparagus-

like cabbage. Though the similitude of broccoli to asparagus may appear somewhat fanciful; yet as precision of classification is obtained, it will be perceived that it is far better to enter into minutiae closely, than to persist in a mode of arrangement which is equally ill-defined and indiscriminating.

This delicious vegetable is perhaps without its rival in the garden, and its culture is very simple; it is too late, however, in the season to raise it from seed, and therefore I defer to enter upon a regular detail till the spring of next year. I have, however, raised some of the finest *Portsmouth* cream-colored, from seeds sown after the 10th of June, which produced compact and exceedingly large heads in the following April or May: it may therefore be worth while to try a small sowing as early as possible in June, following the directions, in as far as concerns the mode of preparing the soil, &c., which are given under the article cabbage, and transplanting into manured trenches, six inches deep, and ten or twelve inches wide, not later, if possible, than the third week of August. In the event of frosts, before November, no time should be lost to bring the earth that was thrown out, and lay as a ridge on each side of those trenches, to the stems of the plants, as is done in earthing celery.

But if we may trust some modern writers of new discoveries, *broccoli* may be propagated by slips, with the most successful results. Every one ought to try the method who has in his garden the stems of plants, the heads of which having been cut show a tendency to protrude sprouts. In the middle of June, says a writer, whose article is now before me, (or for Scotland, say as early as possible in June,) "I slipped off a quantity of the side shoots, and planted them. I had them well watered and well secured in the soil. They struck root in a very short time, and made strong plants which produced heads of a fine size at the usual season." "I am persuaded the plan is well deserving attention, not only with broccoli of the same kind I have cultivated (*late flowering purple*) but with many other kinds; thus an excellent variety might be perpetuated without the risk consequent upon seed."

I have not myself had an opportunity of experimenting upon this vegetable, since I saw the article quoted from, but have reason to believe the plan has been proved to be feasible; in fact, there is nothing in the analogy of the species with its type, which is unfavorable to the operation.

4. **PEASE**.—At this season of the year it may appear almost too late to speak of the cultivation of the pea; but I am inclined to notice it for a reason which will be shortly explained.

The *garden-pea*, of which there are many varieties, is found in the fourth tribe, *Viciae* (that is among the vetches) of the great suborder *PAPILIONACEAE* of the natural order *Leguminosae*, and in the 17th Class, 4th Order of the Linnean System, *DIAPELPHIA, Decandria*. Every one is aware of the peculiar shape assumed by the blossoms of

plants of the pea tribe; which, it is evident, can readily be made to constitute the type of a very natural class, in which most of our esteemed leguminous or pulse-bearing vegetables are to be found.

At some future day, I intend to enter at large upon the characters of all the favorite pease for table use; but on the present occasion I only allude to one, which is a great acquisition, and of very recent introduction, the early white *Warwick*. It is adapted to field, as well as garden culture, is moderately prolific, hardy, extremely early, rapid in its course of growth, soon off the ground; and of a high peculiar flavor, that to some persons is extremely agreeable, though others do not affect it.

The seed, two years since, was dear, its price is now reduced; and it is stated that three crops may be produced on the same land, and leave it open for wheat. This, however, I have not seen proved: but having grown the pea, I can recommend it to every one who wishes a rapid grower. A crop sown in a long drill very early in June, may be succeeded by another sown in July, with every prospect of success. If the ground be dry, from a continuance of hot weather, the best method to ensure a vigorous plant is to dig a moderately broad trench, to saturate the soil at the bottom with water, to return the earth into the trench, and make that very wet; then, after covering the earth with mats, or green boughs for a day, just to permit the earth to settle, and so far to drain itself as to become in a workable condition, to strike a drill three inches deep, to sow the seed along it pretty thickly, but not in the crowded state too frequently seen; water should then be poured from the spout of a pot over the pease, and the loose earth returned upon the seeds, and pressed or trodden firmly over them. One liberal preparatory watering thus given, is of more avail than fifty subsequent sprinklings. *Mildew* so common on the plant of autumnal crops, is, as Mr. Knight truly observes, obviated. He has had perfectly fine pease on his table in October, and it is certain that where disease can be prevented, pease in that season are a delicacy of the first-rate excellence. The *Warwick*, I think, promises to prove a valuable species for the purpose of a late crop, because the course of its entire culture is more rapid than that of the "frame" or early *Charlton* pea. When the plants rise above the soil one inch, the earth near the roots ought to be loosened by the thrust hoe. Another hoeing must be given when the plants are three inches high; and then, after drawing the lightened earth to the stems, to the height of an inch and a half, as a ridge on each side, branching sticks a yard high are to be applied. Nothing favors pea culture more than judicious sticking: the plants are brought to the light, are supported, and at the same time protected. *Mildew* is the bane of autumnal crops: it seems to be promoted by a drouthy state of soil, high solar heat during the day, and cold dews at night: rapidity of growth produced by a deep moist bed, procured by preparatory and profuse waterings, appears to be the only effectual security from this fungus.

From the Quarterly Journal of Agriculture—for June
ON PRESERVING POTATOES, AND RAISING
THEM FROM SEED. BY SIR G. S. MAC-
KENZIE, BART.

The Highland Society, always anxious to procure information, has offered a premium for the best and approved account, founded on experience, of the most successful method of preserving potatoes in good condition, in their natural state, for a period of not less than ten months from the time of their being taken up. I hope to be able to give to the Society satisfactory information on the above subject, having paid long and particular attention to the potato, and to state some circumstances which do not appear to be so generally known as I presumed they were until I saw the offer above quoted.

Of various methods I have tried for preserving potatoes from frost, that practised most commonly seems to be the best, viz: Making a shallow pit about a foot and a half deep, on a dry spot, and heaping the potatoes like a roof to the height of about four feet. On the heap thus formed, straw is laid to the thickness of about eight inches, and over this the earth taken out of the pit, the whole being beaten firm by the back of a spade. Some time about the end of February, or beginning of March, the pit is opened and the potatoes turned over, all the shoots being picked off. I may here remark, that where a few side roots have proceeded from the shoots, I have planted them, and had almost as large a produce as from sets. The mode of planting them is to cut a drill with a spade so deep that the shoots may be covered about two inches. They are laid inclined upwards towards the soil, covered, and another drill made, and so on. The only risk is from frost; for if once nipt down, their shoots do not recover so readily as those from sets. On this subject I beg to add, that for early potatoes it has long been my practice to spread sets on the floor of a vinery, or on a hot bed in March, with a little sand over them. By the time there is little risk of frost, the shoots are long enough for the sets to be planted out about the middle of April. I have frequently had the shoots nipt down, but they always recovered; that is, new shoots sprung up in a very short time, and I never observed that this made any difference in the period of the tubers becoming fit for use. The early potatoes I use are the London early for the first crop; some of my own, which is a little later, and remarkably mealy for an early potato. After the heap is turned over, as I stated above, it may be again covered, and the potatoes allowed to remain a month longer, after which they should be removed to a barn or shed, and picked.—They should now be frequently turned over, and picked free of shoots. If the eyes of a potato are scooped out, it will gradually dry, if properly exposed; and it may then be scraped into flour though not very white. In this state they will keep for an indefinite time; and there is no risk of their becoming mity, as flour does, dried potatoes might be found useful during long voyages, though potato flour is better.

It ought to be made generally known

that there are varieties of the potato which, though sufficiently protected from frost, will not keep, *under any management*, for more than a few months. Do what we will they decay, owing to their natural constitution; other varieties again will keep very long without any trouble. Hence the Society's proper object is not to offer a premium such as the one which has given occasion for the present communication, but to offer one for raising new varieties, and producing one or more with as many as possible of the qualities which a potato is desired to possess. The same observation applies to the keeping of apples and pears, and various fruits and roots. Long keeping is a particular property belonging only to some, and not to all varieties.

Some varieties of the potato are best for the table early in winter, and others are best in spring. Instead of having the trouble to raise different sorts for different seasons, it is best to sow seeds and to procure a number of varieties in this way for selection. It is now about twenty years since I first began to raise new varieties; and I will now state my mode of proceeding, that others may follow it if they think fit.

I first noted down the qualities which it was desirable a potato should have. These are, 1, dryness or mealiness; 2, agreeable taste; 3, moderate size; 4, regularity of shape, not having deep eyes; 5, not bursting when boiled; 6, not having a tendency to shoot at an early period; 7, long keeping; 8, productiveness. Among hundreds of varieties I have not found one possessing *all* of these qualities, but I do not despair.

Having gathered the apples from different varieties, I keep them till spring, when I open them, take out the seeds, and dry them. A piece of ground being prepared by digging in some manure, but sparingly, and the surface being finely raked, the seeds are dropped thinly into shallow drills, two feet asunder. When the plants appear, they are thinned out to eighteen inches in the rows, and I have usually selected the strongest. Those taken out may be transplanted to another spot. As the plants grow, the earth is heaped round them, I have observed that, with some exceptions, those plants which flower the same season, seldom produce tubers. My experience has proved that the produce of the first season is not to be relied on as an indication of future productiveness; therefore no seedling should be rejected the first year. I recollect a plant that produced but one tuber, about the size of a walnut; this produced the second year one hundred and twenty tubers of good size; but this degree of productiveness did not attend succeeding generations. I have observed in general, that rough or scaly skinned potatoes are the driest, and often too the earliest. I plant every tuber produced the first season that is not less than a pea, for should one hit on a good variety, it is then more rapidly increased; it is but a lottery, and some space of ground must be allotted to the drawing of it. I have had as many as three hundred varieties growing at once.—Of course, each variety must be tallied,

and a memorandum kept of every thing connected with each. Each variety should be tested the second year, at the time it is taken up, and again in the spring, and those that are good at both seasons preferred for future trial. Indeed all may be rejected but the one that has the greatest number of the qualities noted. In this way every one may procure sooner or later, a good variety of potato. It is of the greater importance to procure in this way; for difference of soil, and even perhaps of situation, seems to have singular effects, a fine potato in one soil proving bad in another, and *vice versa*. I have one variety that possesses the 1st, 2d, 4th, 5th, 6th, and 7th qualities, which I have cultivated for about eighteen years, and I have not yet succeeded in raising a better. It seldom, however, yields above twenty bolls an acre, of old Ross-shire measure, the peck being fifty-six pounds. Though there are many sorts more productive, yet this potato keeping very long under the management already described, has brought it into very general use in this quarter. I have had young potatoes of this sort, of tolerable size, at my table along with tubers of the previous year. It is ripe by the middle of September. During the two last seasons, the sets of potatoes decayed in many places. None of my own were affected, but some of my tenants lost large patches. I observed a wire-worm on some of the decayed sets, but whether this worm was the cause of the failure, or the failure of the sets induced the insect, from whose eggs the worm proceeded, to lay them on the set, I could not ascertain. It often happens that effects are regarded as cause in such matters. It is my practice to have the potatoes cut into sets, and spread out to dry during ten days or a fortnight before planting them. This serves to prevent risk of their rotting in the ground. But I have known sets of some varieties rot soon after the appearance of the plant above ground; and others I have taken up sound when the crop was ripe. Thus it is clear that long keeping does not depend on the mode employed to preserve potatoes, but on the natural quality of a variety; and the varieties ought to be increased from seeds until the qualities I have enumerated are found in one, or at least the most important of them. It is the opinion of some that the productiveness of potatoes decreases by long cultivation. I doubt this, at least it has not occurred to my observation. If a variety be planted on a soil different from that in which it has succeeded, it may fail, and I have known this to happen.

On the whole, I conceive that the object of the Society can be best attained by the recommendation to every one interested in the culture of potatoes, to raise new varieties from seeds. Seedlings rejected, I mean the second year's produce, need not be thrown away, but given to cattle or pigs, so that the space occupied by the plants cannot be said to have been misapplied.

Since the above notices were written, extensive and accurate experiments have been made in the garden of the London Horticultural Society, in reference to the question, whether it is best to plant sets or

whole potatoes. I had long since found that sets were best. The first set of experiments made seemed, however, in favor of whole potatoes; but I pressed a repetition, and also repeated the experiments myself, and the question has now been finally decided in favor of sets. It might perhaps be of use that a well prepared abstract of the papers in the Horticultural Transactions should be drawn out for the *Quarterly Journal*.* A great deal of nonsense has been published about the remarkable failures of the potato crop in different places. The thing is still a mystery, which may not be cleared up for some time. It appears that early planting gives heavier crops than late planting.

From the British Farmers' Magazine.

HISTORY OF THE NUTMEG.

The tree called *myristicha moschata* by botanists, grows naturally in a group of islands forming a part of the Moluccas, called the Isles of Banda, in the Indian Archipelago: a cluster which seems to have been thrown up by the sea in some volcanic effort, as there is now upon one of them, named Gonong Api, a volcano, constantly emitting smoke, and often flames. The first island, Banda Niera, is the chief settlement, and contains two forts: its harbor is spacious, but difficult of access. The second is Banda Lantoir: the third and fourth in importance are Puloway and Pulovun. These four islands were the only places where the cultivation of the nutmeg was allowed by the Dutch, but there are several others under the same government. What these islands produce in superfluities, they want in necessities. The soil is a rich black mould, but it produces no corn, the natives subsisting chiefly upon sago. The nutmeg tree grows like a pear tree in form and size; its leaf resembles that of the laurel, being of a bright green color on the upper surface, and grayish underneath: when bruised, it diffuses an aromatic perfume. The flowers are white, small and scentless. The fruit is similar to a walnut in form, but more fleshy and full of juice. The external pulp dries up to a crust of a deep yellow color, which, opening at one side, discloses a membranous coat of a beautiful red tint, known to us by the name of mace, which lies immediately over the thin and brittle shell of the nutmeg. This is the time to gather the fruit; if left longer on the tree, the mace would get loose, and the nutmeg would lose that oil, which preserves it, and which is one of the great excellences of the fruit. The nutmegs, which are gathered before they are perfectly ripe, are preserved in vinegar or sugar. The tree yields three crops annually, the first in April, which is the best, the second in August, and the third in December, yet the fruit requires nine months to ripen it: thus the tree is constantly bearing flowers and fruit at the same time. After the fruit is gathered, the outer covering is stripped off, and the mace being carefully separated from the kernel, is laid in the sun to dry. The nuts require more preparation; they are spread upon hurdles, and dried for

six weeks, before a slow fire, in sheds erected for the purpose. After this they are separated from the shell and thrown into a strong mixture of lime and water, which is a necessary precaution to preserve them from worms: with the same intention the mace is sprinkled with salt water. After this process, the fruit is cleaned, and packed up for exportation.

It appears, from experience, that only one-third of the nutmeg trees bear fruit, but this cannot be discovered until the twelfth or fourteenth year of their growth; therefore, they must not be cut down at an earlier age. The fruit-bearing property is of short duration, as the tree will yield only from the twelfth to the twentieth year, and generally perishes at the age of twenty-four years.—The nutmeg tree delights in a damp soil, overgrown with weeds, and even shaded with large trees, provided it be not stifled with them. Under the shelter of the *canarium commune* (?) it thrives very well, and bears the cold of the tops of the mountains. The fruit differ in quality according to the age of the tree, the soil, and the method of culture. The round nutmeg is preferred to that which is oblong, though they are specifically the same. It ought to be fresh, moist, heavy, of a good scent, and an agreeable, though bitter flavor, and it should yield an oily juice when pricked.—The islands are divided into a number of plantations, under the management of a mixed race of Europeans and Indians.—The Dutch made use of many illiberal means to secure to themselves the exclusive possession of these valuable productions; many trees they destroyed, reserving only sufficient to produce a certain quantity of nutmegs; but finding the climate of Banda very unhealthy, and that a great number of their servants fell victims to it, they attempted to transfer the culture of this spice to Amboyna; these experiments have, however, proved unsuccessful.

In 1774, the English navigator, Forrest, found in a small island near New Guinea, called Manaswary, a nutmeg tree, the fruit of which was of an oblong shape, but well flavored. This enterprising man plucked up about a hundred stems of the tree, and slanted them in 1776, on the island of Bunwoot, which had just been ceded to him for the East India Company, by the Sultan of Mindanao. Bunwoot is situated to the north east of Borneo, and is a healthy spot, covered with beautiful trees.

Libilliadiere also found the nutmeg tree upon the little island of Cocos, near the northern extremity of New Ireland. The fruit, when he saw it, was unripe, and of an oblong form. The island is covered with evergreen trees, among which the *Barringtonia speciosa* is conspicuous. It extends its branches laden with flowers horizontally a great way over the sea.* There are few cocoa-nut trees, but many figs of different kinds. Fruits of several species of the screw pine, of the *Barringtonia*, and of the *Heritiera*, which trees stretched their branches and even their trunks, in a very

*This circumstance is remarked by every voyager passing through among these islands.

remarkable manner over the sea. It is thus, no doubt, that the seeds of plants are conveyed from one island to another without the assistance of man. Where there are no rills to carry fruits to the sea, the want of moisture prompts these trees to bend over the ocean, and obtain from its evaporation the nourishment they require.

The principal of the Molucca islands are Amboyna, noted for the cultivation of the clove-tree; to which may be added Ceram, Ternate, Tidore, and Batchean.—Ceram is a large island to the north of Amboyna. Several chains of mountains run parallel to each other in a direction from east to west, and separated by fertile vallies containing luxuriant vegetation. In ancient times the peninsula of Hoewamochel produced large quantities of nutmegs, but the trees were extirpated by the Dutch about the year 1697. At present it is covered with sago trees (*cycas circinales*.) The wood usually called Amboyna, and the Salmoni, both of which are exported from Amboyna for the purposes of ornamental cabinet work, are mostly the productions of Ceram. Along the shores of this island, uncommonly fine shells are found.

Ternati is only about twenty-four miles in circumference. Larger nutmegs are found on it than any procured at Banda: but the culture of them is discontinued.

Tidore, the next of these islands, lies to the south of Ternate, and, like that island, is mountainous, and well watered by streams from peaks which are generally capped with clouds. In 1521, Juan Carvallo, one of the surviving companions of Magellan, arrived at Tidore, where he was well received, and allowed to load two ships with spices for Spain. The Portuguese and Spaniards after this traded to the island. In 1579, Drake arrived there and began to gather spices without having permission from the king, who was at first greatly incensed, but was afterwards appeased by presents. The inhabitants of all these islands are Malays.

The Chinese landing upon the Moluccas were the first discoverers of the clove and nutmeg. These new acquisitions were soon admired all over India, whence they were conveyed to Persia and Europe. The Arabians repaired to the islands but were driven out by the Portuguese, who, in their turn, yielded to the Dutch in the year 1621. After being alternately in the possession of their conquerors and the English, they were finally taken possession of by the latter in 1810. I have named those of the Moluccas only which are noted for their spices. Among the numerous small islands comprehended under the same government, are several producing various articles of exportation.

When we reflect upon such productions of nature as those of which I am treating, we must admire the beneficence of the Almighty, in having provided us with the means of varying, according to our particular taste, the flavor of the food necessary to our sustenance: how much more grateful ought we to be for those higher blessings of intelligence and industry, without which the treasures of the east would have remained confined to the dis-

tant spots where they grow. We import from these and other lands, luxuries, which by constant use almost become necessities to us: we ought at least to bestow in return, the blessings and virtues of civilization. Many Europeans have and are attempting this, but it is to be feared that, until by some great revolution in the moral world, the degrading traffic in slaves be entirely abolished, civilization will make but slow progress in the three quarters of the world thus disgraced.—We are assured that the “knowledge of the Lord shall cover the earth as the waters cover the sea,” and although we shall not see that period, we must trust that it will arrive; and that then the gentle Hindoo and the savage Malay, shall be united in the bonds of Christian peace and brotherly love.—[Mag. of D. E.]

RECLAIMING WASTE LANDS.

When we look about us in different parts of the State, we cannot help being struck with the amount of waste lands on every side. These appear in the shape of pastures grown up to bushes—in the form of swamps full of alders and birches, and in bog land which would bear excellent grass if the moss and the hardhacks were destroyed. Many, who undertake to redeem some their lands do it but partially, and as a consequence of not going thorough, have it to do over again every year or two.—For instance, we know a man who has mowed or cut down his alders four or five times, and they as often sprung up, and soon gave him another crop. A better way to manage this kind of growth is to pull them out by the roots, by means of ox labor. A chain put round them near the roots, and so fastened as to form a noose which will slip up when pulled upon, and a hand to bend the tops over the contrary way from which the oxen pull, will eject them root and branch. They will never start again. Another method is to have a large stout iron hook made for the purpose; an eye may be made at one end into which to fasten the chain. This may be hooked into the roots; and thus they may be twitched out with ease and despatch. A yoke of oxen and a couple of hands will clear up, and most effectually too, a goodly piece in a day. In regard to bogs—after they have been ditched in a proper manner so as to make them sufficiently dry—the application of fire in the spring, will in a few years effectually clear off such foul stuff as encumber them, and hinder the growth of better productions. In this way much of the waste lands which now disfigure the face of the State, and are comparatively useless, may be rendered smooth and profitable in a short space of time.—[Maine Farmer.]

PLOUGHING BY STEAM.—The following is from a late English paper:—

“Some experiments were tried on Friday week at Red Moss, near Bolton, in this county, in the presence of Mr. Handley, M. P. Lincolnshire, Mr. Chapman, M. P. for Westmeath, Mr. Smith of Deanston,

and other men interested in agriculture, with a complete and very powerful steam plough, constructed by Mr. Heathcote, M. P. for Tiverton. About six acres of raw moss were turned up in a few hours, and turned up in a most extraordinary style; sods eighteen inches in breadth, and nine inches in thickness being cut from the furrow, and completely reversed in position, the upper surface of the sod being placed exactly where the surface had been before. The possibility of ploughing by steam has thus been established, though, as the employment of the steam-plough, in preference to one drawn by horses, will depend on the comparative cost of the two powers, and on that of the implements used, and as there are not at present any sufficient data for judging what the difference of the cost will be, it is not possible to say how far steam is likely to be applied to this department of agriculture. The plough of Mr. Heathcote, though a very powerful machine, appears to us to be much too complex and costly for common agricultural purposes, though we have little doubt that it might be used not only with effect, but advantage; in reclaiming large portions of moss land—such as the bogs of Ireland. Indeed, it is the opinion of Mr. Heathcote himself, that it would not at present answer to employ it in reclaiming a smaller portion of bog than 1500 or 2000 acres, though it may probably be cheapened and simplified, so as to make it ultimately useful on a smaller scale.”

We have seen, this week, at Leeds, a specimen of bleached flax, prepared by a York chemist, which appears to present a decided improvement in the manufacture of that article. It has created a great sensation amongst the manufacturers, and been taken for silk. It is capable of being manufactured into the finest thread for veils, lace, cambric, etc., and will supersede those articles of French manufacture. The texture is most beautiful. [Doncaster Chronicle.]

IODINE IN CONSUMPTION.—The external application of iodine to the chest is a mode of employing it, at an early stage of consumption, which I consider at once safe and efficacious. When an ointment, prepared by mixing together two parts of hydriodate of potash, one part of iodine, and ten or twelve parts of ointment, is applied to the surface of the chest, especially over the parts corresponding to that which is diseased of one or more lungs, in such quantities as to give rise to a considerable degree of cutaneous inflammation, it will mostly be found to produce a great improvement in the state of the affected portion or portions of the lung or lungs, provided its use be continued for a sufficient length of time. I have repeatedly found after the continued application of Iodine ointment to the chest for some months, that the general local symptoms and all the physical signs of the presence of tubercular formation of the lungs, were completely removed.—[Dr. Little on Consumption.]

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BEING a plain and familiar treatise on the Culture of the Soil, the Orchard and the Garden; the rearing, breeding, and management of every description of Live Stock, the diseases to which they are subject, and the remedies; directions for the management of the Dairy; a description of the most useful implements of Husbandry; and every information necessary to the practical agriculturist. Also, an index, by which any subject can be instantly referred to. In three parts: Part 3, on Live Stock, under the immediate supervision of R. H. Buid, Veterinary Surgeon, New-York.

Published by COLLINS, KEES & CO., 36—37 Wall* 230 Pearl-street.

HUDSON AND DELAWARE RAILROAD.

NOTICE TO CONTRACTORS.

SEALED PROPOSALS will be received at the Office of the Hudson and Delaware Railroad Company, in the village of Newburgh, until the 10th day of October next, at 2 o'clock, P. M., for the Grading, Masonry, Bridging, &c., of their road from the west side of Chamber's Creek to Washingtonville, a distance of ten miles.

Plans, Profiles, Specifications, &c., will be in preparation, and exhibited ten days previous to the letting.

JAS. B. SARGENT, Engineer. Newburgh, Aug 24, 1836. to 10—35

OFFICE OF THE WETUMPKA AND COOSA R. R. Co. } WETUMPKA, ALA., 29th July, 1836.

THE Directors of the above Company are desirous of securing the services of a competent resident Engineer, to survey and locate the route of the Wetumpka and Coosa Railroad, commencing at this place. The route of the road will pass through a country that is considered as healthy as any in this latitude. Persons desirous of embarking in such an undertaking will please address the undersigned at this place.

W. H. HOUGHTON, Sec. W and C. R. R. Co.

The Evening Star and Courier and Enquirer, New-York; the Commercial Herald, Philadelphia; Baltimore Gazette; National Intelligencer, Washington; Richmond Enquirer and Whig, Richmond, Va.; and Charleston Mercury, will please give the above eight weekly insertions, and send a copy containing the advertisement, together with their bills, to the undersigned. (34—50) W. H. HOUGHTON.

NOTICE TO CONTRACTORS.

SEALED Proposals will be received by the subscriber at the office in Elizabethtown until the evening of the 10th of September next, for grading and bridging 23 miles of the Elizabethtown and Somerville Railroad—the line will be staked out ready for examination on or about the 28th inst.

Plans and specifications will be exhibited at the office 10 days previous to the day of letting. In the above work there is about 300,000 cubic yards of earth to be removed, and six bridges, from 40 to 300 feet in length—the Piers and Abutments to be built of good Ruble Masonry, and the principle part of the wooden superstructure on the Lattice plan.

JAMES MOORE, Ch. Eng. of E. and S. R. R. Co. Elizabethtown, Aug. 17, 1836. 34

NOTICE TO CONTRACTORS.

PROPOSALS for excavating and embanking the Georgia Railroad from the upper end of the work, now under contract, to Greensboro', a distance of 34 miles, will be received at the Engineer's Office, at Crawfordsville, on the 21st and 22d days of October next.

—ALSO—

At the same time, for the Branch to Warrenton, 4 miles. And if prepared in season, the Branch to Athens, length 37 mil. s.

J. EDGAR THOMSON, Civil Engineer. 33—1220

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Durfee, Coleman & Co., for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

8th month, 8th, 1836. Hudson, Columbus County, State of New-York.

E. S. TOWNSEND, GEORGE COLEMAN, ROBT. C. FOLGER, SYDNEY S. DURFEE 33—11

NOTICE TO CONTRACTORS.

JAMES RIVER AND KANAWHA CANAL.
PROPOSALS will be received at the Office of the James River and Kanawha Company, in the City of Richmond, from the 15th to the 23rd day of August, for the construction of all the Excavation, Embankment and Walling not now under contract, together with nearly all the Culverts and the greater portion of the Locks between Lynchburg and Maidens' Adventure.

The work now advertised embraces the twenty miles between Columbia and the head of Maidens' Adventure Pond, the eight miles between Seven Island Falls and Scottsville, and about twenty isolated sections, reserved at the former letting, between Scottsville and Lynchburg.

The quantity of masonry offered is very great—consisting of about two hundred Culverts of from three to thirty feet span; nine Aqueducts, thirty-five Locks a number of Wastes, with several farm and road Bridges.

General plans and specifications of all the work, and special plans of the most important Culverts and Aqueducts, will be found at the offices of the several Principal Assistant Engineers on the line of the Canal.

The work will be prepared for examination by the 25th July; but mechanics, well recommended, desirous of immediate employment, can obtain contracts for the construction of a number of Culverts at private letting.

Persons offering to contract, who are unknown to the subscriber, or any of the Assistant Engineers, will be expected to accompany their proposals by the usual certificates of character and ability.

CHARLES ELLET, Jr.,

Chief Engineer of the James River and Kanawha Company.

NOTE.—The Dams, Guard-Locks, most of the Bridges, and a number of Locks and Culverts, are reserved for a future letting. Persons visiting the line for the purpose of obtaining work, would do well to call at the office of the Company in the city of Richmond, where any information which they may desire will be cheerfully communicated.

The valley of James River, between Lynchburg and Richmond, is healthy. (20—tal8) C. E. Jr.

RAILROAD CAR WHEELS AND BOXES, AND OTHER RAILROAD CASTINGS.

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RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation. J25tl

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order. IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

NOTICE OF THE NEW-YORK AND ERIE RAILROAD COMPANY.

THE Company hereby withdraw their Advertisement of 26th April, in consequence of their inability to prepare in time, the portions of the line proposed to be let on the 30th June, at Binghampton, and on the 11th of July at Monticello. Future notice shall be given, when proposals will be received at the above places, for the same portions of the road. JAMES G. KING, President. 21—tl

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice. H. R. DUNHAM & CO. 4—ytl

FRAME BRIDGES.

THE subscriber would respectfully inform the public, and particularly Railroad and Bridge Corporations that he will build Frame Bridges, or vend the right to others to build, on Col. Long's Patent, throughout the United States, with few exceptions. The following sub-Agents have been engaged by the undersigned who will also attend to this business, viz.

Horace Childs,	Henniker, N. H.
Alexander McArthur,	Mount Morris, N. Y.
John Mahan,	do do
Thomas H. Cushing,	Dover, N. H.
Ira Blake,	Wakefield, N. H.
Amos Whitmore, Esq.,	Hancock, N. H.
Samuel Herrick,	Springfield, Vermont.
Simeon Herrick,	do do
Capt. Isaac Damon,	Northampton, Mass.
Lyman Kingsly,	do do
Elijah Halbert,	Waterloo, N. Y.
Joseph Hebard,	Dunkirk, N. Y.
Col. Sherman Peck,	Hudson, Ohio.
Andrew E. Turnbull,	Lower Sandusky, Ohio.
William J. Turnbull,	do do
Sabried Dodge, Esq.,	(Civil Engineer,) Ohio.
Booz M. Atherton, Esq.,	New-Philadelphia, Ohio.
Stephen Daniels,	Marietta, Ohio.
John Rodgers,	Louisville, Kentucky.
John Tilton,	St. Francisville, Louis'a.
Capt. John Bottom,	Tonawanda, Penn.
Nehemiah Osborn,	Rochester, N. Y.

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the National road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contocook river at Hancock, N. H. Across the Connecticut river at Haverhill, N. H. Across the Contocook river at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Kennebec river, at Waterville, in the state of Maine.—Across the Genesee river, at Mount Morris, New-York, and several other bridges are now in progress. The undersigned has removed to Rochester, Monroe county, New-York, where he will promptly attend to orders in this line of business to any practicable extent in the United States, Maryland excepted. MOSES LONG.

General Agent of Col. S. H. Long.

Rochester, May 22d, 1836. 19y—tl

PATENT RAILROAD, SHIP AND BOAT SPIKES.

The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent), are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

* * All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.
* * Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1223am) H. BURDEN.

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens	Ames' superior back-strap Shovels
150 do	do do plain do
150 do	do do cast-steel Shovels & Spades
150 do	do Gold-mining Shovels
100 do	do plated Spades
50 do	do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.

No. 2 Liberty street, New-York.

BACKUS, AMES & CO.

No. 8 State street, Albany

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. 4—ytl

RAILWAY IRON, LOCOMOTIVES, &c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

350 tons	2½ by 4, 15 ft in length, weighing 4 2/3 lbs. per ft.
280 "	2 " 4, " " " 3 5/8 "
70 "	1½ " 4, " " " 2½ "
80 "	1½ " 4, " " " 2 5/8 "
90 "	1 " 4, " " " 1 1/8 "

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 2½, 3, 3½, 4, 4½, and 5 inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us.

A. & G. RALSTON.

28—tl Philadelphia, No. 4, South Front st.

OFFICE PONTCHARTRAIN, RAILROAD CO. }
New Orleans, 19th May, 1836. }

THE Board of Directors of this Company, will pay the sum of five hundred dollars to the inventor or projector, of a machine or plan to prevent the escape of sparks from the Chimney of Locomotive Engines, burning wood, and which shall be finally adopted for use of the Company. No further charge to be made for the right of the Company to use the same.

By order of the Board,

JNO. B. LEEFE, Secretary.

28—3m.

THE NEWCASTLE MANUFACTURING COMPANY, incorporated by the State of Delaware, with a capital of 200,000 dollars, are prepared to execute in the first style and on liberal terms, at their extensive Finishing Shops and Foundries for Brass and Iron, situated in the town of Newcastle, Delaware, all orders for LOCOMOTIVE and other Steam Engines, and for CASTINGS of every description in Brass or Iron RAILROAD WORK of all kinds finished in the best manner, and at the shortest notice.

Orders to be addressed to

Mr. EDWARD A. G. YOUNG,
Feb 20—ytl Superintendent, Newcastle, Del

TO CANAL CONTRACTORS.

Office of the Sandy and Beaver Canal Co., }
July 25th, 1836. }

Proposals will be received at the office of the Sandy and Beaver canal company, in New Lisbon, Columbiana county, Ohio, until Monday the 10th day of October next, for the construction of about 50 cut stone locks, 17 dams, (varying from 5 to 20 feet in height) one aqueduct across the Tuscarawas River, several bridges, and about 10 or 15 miles of canal.

Plans and specifications of the work may be examined at the Engineers office, New Lisbon.

Persons unknown to the Engineer must accompany their proposals with good recommendations.

B. HANNA, President.

E. H. GILL, Chief Engineer.

30—to10

TO CONTRACTORS.

Sealed proposals will be received at Jackson, until the 15th day of September next, for the graduation masonry and bridging of the 3d division (50 miles) of the Mississippi Railroad.

This road is located on a pine sandy ridge, the country is healthy, and provisions can be readily obtained at all seasons of the year.

The whole line (150 miles) will be placed under contract, as the location advances next fall; and it is believed that no institution can offer greater inducements to good Contractors than this.

F. H. PETRIE, Chief Eng.

ENGINEERS OFFICE, }
Natches, June 10, 1836. }

23—till Sep. 5